

# Municipal Journal

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LAYING WATER MAIN ACROSS RIVER AT ROME, GA.

## LAYING WATER MAINS UNDER STREAMS

Three Different Methods—Laying Flexible Joint Pipe on a Boulder Bed and on a Rocky Bottom—  
Laying from a Pontoon—Bridging the Channel Below Water

Slightly Condensed from Paper Before American Water Works Association, by M. L. WORRELL, Manager  
Water Works, Meridian, Miss.

WHILE Superintendent of Public Works at Rome, Ga., the author had to lay a water main across Silver Creek and crossing the Etowah river at two points. Two different methods were employed in these several crossings, and a fourth river crossing, made by the author at Rome, Ga., and described by him in a discussion of the original paper, was made in still a third way.

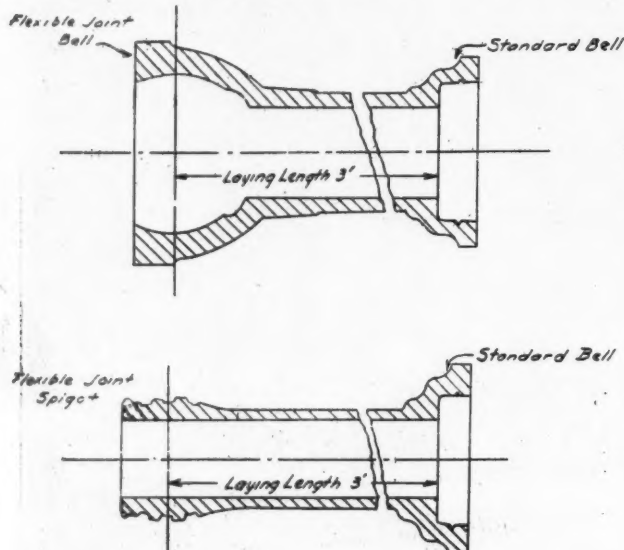
The creek crossing was along the side of a highway bridge, but as the stream was subject to enormous floods it was not thought advisable to place the pipe upon the bridge, but rather to lay it in the bed of the stream. The creek at this point was 60 feet wide between banks at the street level and 40 feet wide at low water, and the depth of water was ordinarily 12 feet. A 10-inch main was to be laid and the kind commonly known as swivel or flexible

joint pipe, weighing 230 pounds per foot, was used, the cost of this pipe being 2 cts. per pound delivered in Rome. It has been stated that this pipe can be deflected through an angle of 16 degrees at the joints, but in this work the safe limit was found to be about 12 degrees if leakage and even rupture were to be avoided.

Five 12-foot lengths were used and were first put together on a platform spanning the creek at the street level and then lowered into the stream by means of proper tackle, until it rested on the bottom, the two ends being kept above the water so that they could be joined later to the main of ordinary pipe on each side of the creek.

The pipe was then joined to the street mains and a test (hereinafter described) was made for leakage. This test revealed a leakage of about 28,000 gallons in 24 hours,

which was considered excessive, and a diver was sent down to ascertain the probable cause. He found that too great deflection at the joints had caused the bell of one piece to press heavily upon the spigot of the adjoining piece at three of the four joints. The five lengths were then disconnected from the shore mains and raised in the same way as they had been lowered, the joints recalked, and the bottom of the creek (which was of solid rock) partially filled with several yards of loose boulders, and the pipe again lowered to rest upon these. A second test showed a leakage of only 380 gallons in 24 hours and this was somewhat remedied by a diver tightening up a leaky joint. The foundation upon which it rested was then widened by the addition of more boulders. A test made some months later showed a leakage of less than 200 gallons a day. The total cost of this work approximated \$380, or about \$6.35 per linear foot, everything included.



SPECIAL FLEXIBLE JOINT PIPE.

The two river crossings were made in an entirely different way. The first of these was at a point 216 feet wide, the banks being 40 feet high above the low water mark. A wire cable was stretched from bank to bank, the ends being attached to trees, and a pontoon boat or raft was constructed and fastened to this after the manner of a ferryboat, and used for laying the line, pipe by pipe, across the river. In constructing this raft 25 empty barrels, first made water tight, were lashed together with  $\frac{1}{2}$ -inch manila rope in three rows, ten barrels in the outside rows and five barrels in the middle row, thus leaving a "slot" or open space at the rear end of the middle row, through which slot the pipes were lowered. A deck was then built upon the barrels, constructed of 2 x 12-inch pine lumber, and the barrels were secured to the under side of this by drop pieces or sleepers which enclosed the whole and made a strong raft which it was practically impossible to sink. Over where the barrels were omitted in the middle row a slot was left in the deck. The raft was attached to the wire cable by two trolleys and the necessary tackle. The raft carried nothing in the shape of equipment but a tripod made of two-inch wrought iron

pipe fastened together by a bolt passed through a flattened end in each pipe, which bolt supported a triplex chain block for handling the pipe. A supply boat for carrying extra lengths of pipe, lead, yarn, etc., was attached to the same cable.

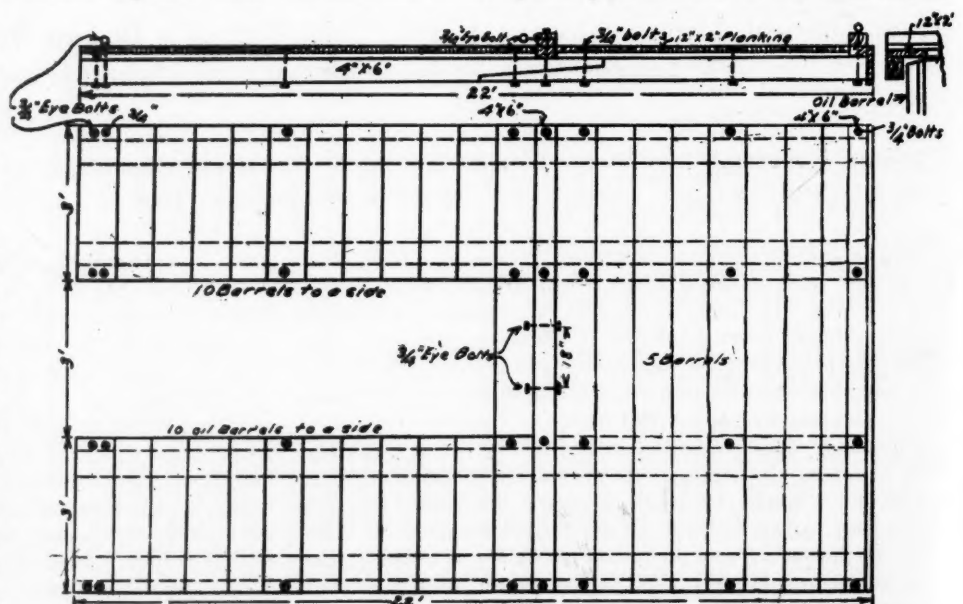
Ward pipe joints were used for this line. The first length of pipe was fastened to a tree by means of a strong chain, the bell of the pipe pointing riverward. To this pipe, while resting on the raft, was fitted the second length, the raft was pulled forward and the first pipe lowered into the water, the third pipe joined to the second, and so on length by length the joints were made, poured and calked and the pipe lowered into the stream. When the raft had reached the opposite side the "slot" was moved to the front end of the raft by moving to the rear end the five barrels of the middle row and the deck attached to them, which permitted the laying of the last length or two of pipe up to the extreme further edge of the river, where it was joined to ordinary cast iron pipe.

The bed of the river had been found to be of solid rock with three ledges running longitudinally and at practically a uniform height. These ledges had been previously notched by blasting with the use of dynamite along the proposed line of the pipe, and the pipe when laid was fitted into these notches. In addition to this, two joints of the pipe were anchored by heavy chains to dead-men permanently constructed in the banks. This was done to provide further against movement of the pipe down stream.

Less than six days were required for the preparation and laying of this crossing, the force consisting of a foreman, "straw boss," five negro laborers and a waterboy, costing \$66, or about 30 cts. per foot for labor. The entire cost of the work was less than \$700.

The second river crossing was made in the same way, a 12-inch pipe being laid, the river at this point being somewhat wider and deeper. No notches were cut in the rock and no channel was prepared, and for this reason and because of facility gained in the first crossing, less time was required. The cost of this crossing was approximately \$900. Both of these crossings were done in September when the river was unusually low. There were no accidents or anything to interfere with the prosecution of the work of these crossings. The work was and still is entirely satisfactory, and cost more than \$3,000 less than the offer of a water works contractor who had previously done similar work but by a different method.

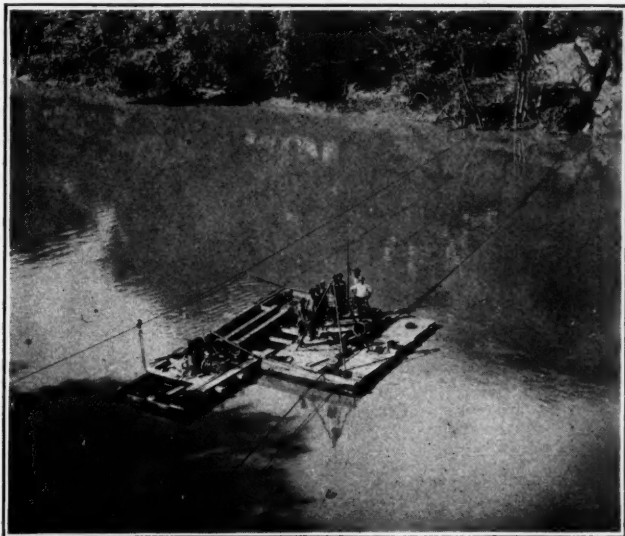
At each of these three crossings a valve had been placed at each end of the special pipe in order to cut them out in



DETAIL OF CONSTRUCTION OF RAFT.



cases of emergency; and these valves facilitated testing the crossings. One of the valves at each crossing was enclosed in a coffin-shaped manhole and here a pipe was tapped into the main on each side of the valve, a  $\frac{3}{4}$ -inch pipe on the inlet side and a one-inch pipe on the outlet. A very sensitive one-inch meter was connected in between these taps, both valves were closed and the water turned on slowly at the inlet tap and as slowly let out at the outlet tap. As soon as the meter and outlet connection had filled



BIRD'S-EYE VIEW OF RIVER CROSSING, ROME.

the meter ceased to operate, apparently showing that there were no leaks; this being the experience at both river crossings. These taps were left in and tests of the tightness of these crossings were made quarterly thereafter.

These crossings were constructed under the direction of J. N. Hazlehurst, as consulting engineer, who had associated with him C. L. B. Anderson.

The crossing at Meridian, Miss., was in a line of 20-inch cast iron pipe connecting a reservoir with a settling basin in the city two miles away. Owing to the slight fall available it was considered absolutely necessary to select a route as nearly straight as possible and to construct the pipe line to an absolute grade, avoiding anything like a summit for collecting air. On this line was a creek 25 or 30 feet wide, which it was decided to go under by an inverted siphon 500 feet long and dropping 20 feet below the hydraulic gradient. This creek carries a large amount of sand and inquiries and observations showed that the tendency of it is to fill and widen rather than narrow and deepen. At ordinary winter height the creek is 30 feet wide and 9 feet deep. Here an entirely different method was used, the pipe being laid in saddles resting upon a 36-foot by 3-foot trussed beam, constructed similar to the bottom of a freight car in so far as the rods were concerned. Two house moving truss beams, secured from a local contractor, were placed across the creek, the beam was rolled out onto them, four joints of ordinary 20-inch class A cast iron pipe, with one blow-off T and a 6-inch blow-off valve attached, were constructed in the saddles on the beam, the joints all being leaded and calked. The pipe was secured to the truss by several U bolts bent to a 22-inch radius. Each bank was excavated to below water level for a few feet in from the edge of the creek to receive the ends of this truss, and the truss and pipe resting upon it were lowered to a point  $4\frac{1}{2}$  feet below the water surface, where it rested upon solid earth at the bottom of the excavations made in the bank. Previous to lowering, a barrel head had been fastened in each end of the pipe to prevent it from filling with sand. The truss and pipe were lowered by the use of gin poles and capstans. After clearing away the rigging and beams,

the water of the creek was dammed off at each end of the pipe by the use of sand sacks and the ends of the crossing pipe joined to the main line.

Since then, to obtain full security, six creosoted piles have been driven in three bents, each bent being capped with an oak timber, from which the original construction was suspended with U bolts. The piles were driven in the bottom of the creek as far as they could be driven, about 12 feet, and the upper ends were sawed off flush with the top of the pipe to receive the oak caps. This method allows the water to pass both over and beneath the pipe. It appears to be strong and absolutely rigid in every direction. The banks at the two ends of the crossing have been protected by two rows of Wakefield sheet piling driven some 10 feet or more into the earth in crescent shape.

### CHART OF A MUNICIPAL GOVERNMENT

In our issue of May 23 we published a chart showing the general outline of the government of the city of Iola, Kan. We have recently received a chart of the city of Seattle, Wash., giving information of the same nature but much more complete, which we would be glad to reproduce here if space permitted. We are, however, giving a reduced chart showing the general outline, which will give a good idea of the distribution of functions among the several branches of this city's commission government. It is noticed that the Mayor is the head of the Executive Department, while the Board of Public Works is in charge of the Administrative Department. There report directly to the Mayor nine departments, there being four additional more or less independent departments in the Executive Department. The Board of Public Works has charge of six departments.

In the full chart each officer and employe, with his salary, is shown in the same way. For instance, in the water department there is a superintendent with a salary of \$4,200; reporting directly to him an auditor in charge of the general office on a salary of \$1,800 and a general foreman in charge of operating and maintenance receiving the same salary. Under the general foreman are the pumping station officials, consisting of the chief engineer at \$1,500, and two first assistant engineers at \$1,320; also the installation and maintenance service, in which are a first assistant general foreman at \$1,620, two second assistant general foremen at \$1,440, six assistant foremen at \$1,200, nine wagon foremen at \$1,020, caulkers at \$2.25 a day, pipe helpers at \$3.00 a day and laborers at \$2.75. Even more positions are indicated under the auditor in charge of the general office. All this is shown in chart form; and this is one of the least complicated of the departments so shown in the general diagram. Altogether several hundred positions, with their salaries and the number of men employed in the position, are shown clearly on this chart with the proper lines indicating to

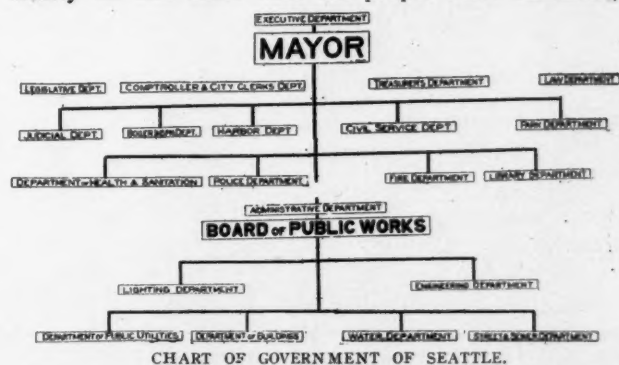


CHART OF GOVERNMENT OF SEATTLE.

whom they make direct report. One advantage of a chart of this kind is that, with it at hand, it should be easy to avoid the possibility of passing conflicting ordinances relative to the powers and obligations of the several departments and sub-departments of the city government.

## SEWERING JAMAICA BAY DIVISION

Plans Prepared for Low, Flat District of Greater New York—Interceptors, Pumping Stations, Treatment Plants and Outlets

THE Metropolitan Sewerage Commission of New York has made public its general plans for the treatment of the sewage of a low lying, rapidly growing area of Brooklyn and Queens Boroughs, being the land extending from 3 to 6 miles west, north and east of Jamaica Bay, and a sandy peninsula about 8 miles long which forms the southern boundary of the bay. The total area of the territory included is about 83.8 square miles. Part of this is already built up with residences, but a considerable area is still farm land, which, however, it is expected will be fully opened up for residences within the next twenty-five to fifty years. Jamaica Bay is a large shallow body of tidal water receiving the flow from several small streams and containing numerous marshy islands and hummocks intercepted by narrow, crooked channels, its connection with the ocean being through a narrow inlet at its western end. It is evident that these conditions make it imperative that house sewage should not be discharged around the shores of the bay; all the more so since the waters are used extensively for growing oysters and hard and soft shell clams. It is probable, however, that the future development of the bay and its surroundings will make the continuation of this use unsafe from the standpoint of disease, even though the sewage be entirely diverted from it. Plans are being perfected by which the bay will, within the next few decades, be developed for commercial purposes by the building of bulkheads and docks, dredging channels, etc. But even if this is done the combined effect of the small streams entering the bay and the small amount of tidal ebb and flow which is permitted by the narrow inlet which connects it with the ocean will not be sufficient to keep the water pure, if it receives any amount of pollution.

The plans of the Commission contemplate dividing this area into two drainage districts, the western of which is considerably the larger. The sewage from this western area will be collected and carried to treatment works on Barren Island, which forms the northern shore of the inlet, which inlet furnishes probably the best available location for an outfall. The sewage from the smaller eastern area will be carried to an island at the eastern end of the bay known as Jo Co's marsh, where also there will be treatment works, the outfall from which will discharge into what is now the main channel, near the point where a comparatively large creek enters it. These works will also receive the sewage from the peninsula lying south of the bay known as the Rockaway peninsula.

In the western section seven new pumping stations will be required to lift the sewage into the main interceptor, in addition to one existing pumping station. There will be a siphon consisting of two 66-inch pipes at one point in this interceptor, which will carry the sewage to a main pumping station about  $1\frac{1}{2}$  miles north of Barren Island, from which the sewage will be forced to Barren Island through two 86-inch force mains carried across meadows and swamp land. The pumping station is planned to contain centrifugal pumps with a capacity to lift 350,000,000 gallons per day against a head of 35 feet. This will be the only pumping station required in the line of the interceptors proper, the others being provided to lift discharges from sub-areas into the interceptor.

Barren Island offers ample area, although 100 acres of

land will be ultimately required for the treatment works. This island already belongs to the city, garbage reduction works are now located there, there are no residences in the vicinity except for the workmen employed at the reduction plant, it is accessible for transportation by water (in case it should be desired to carry the sludge to sea by boat), and the inlet which washes its southern shore, on account of its depth, swift currents and proximity to the ocean, furnishes an admirable opportunity for discharging the effluent. It is estimated that if all the sewage which would drain into Jamaica Bay by the year 1960 were thoroughly diffused in this inlet the sewage would, under ordinary conditions, be diluted by about 147 volumes of water at times of low tide. This would be about six to seven times the amount of theoretical dilution required to produce sufficient oxygen to digest the organic matter during the summer months, the most unfavorable of the year. It does not seem best to rely upon this ideal condition, however, and treatment for removing the grosser solids and part of the dissolved impurities must ultimately be provided. The commission has accordingly assumed that settling tanks, sprinkling filters and settling basins will ultimately be required. The sludge can either be taken to sea and dumped, or the marsh lands near the plant will furnish an opportunity for using it for filling for many years to come.

The estimated cost of the interceptors, pumping stations and force main for this western district is \$5,511,000; that of the treatment plant, \$4,623,000; and the outfall pipes and contingencies bring the total estimate up to \$11,830,000. Parts of the pumping plants, siphons, treatment plant and outlet pipes need not be constructed for a number of years.

The eastern district consists of an interceptor draining to a pumping station, from which the sewage is pumped through a 39-inch force main to the treatment works; the centrifugal pumps here having a capacity of 40,000,000 gallons a day against a head of 77 feet. The interceptor on Rockaway peninsula includes five pumping stations, in addition to the main pumping station which carries the sewage across the meadows through a 36-inch force main to Jo Co's marsh. This pumping station will have a capacity of 30,000,000 gallons per day against a head of 40 feet.

The marsh or island where these treatment works are to be located is at present waste land and considerable distance from any improved property. Although it is at the junction of a creek and channel which provide as favorable conditions for dilution as are to be found at the eastern end of the bay, the currents depend largely on the wind and the oscillations of the tide are not sufficient to dispose of a large volume of putrescible sewage. It is, therefore, proposed to construct here settling tanks, sprinkling filters and settling basins, for which about 30 acres of land will be required by 1950. This treatment plant is estimated to cost \$1,061,340, and the outfall pipes \$90,000 additional. The estimated cost of the interceptors, pumping stations and force mains is \$920,670. Adding 15 per cent. contingencies brings the total estimate to \$2,383,000.

In general the entire plan provides for draining 53,659 acres, estimated to contain a population of 1,415,700, contributing 204,000,000 gallons per day of house sewage. (It is not proposed to treat storm sewage, but this will be carried to the nearest outlets, the separate system of sewage being provided.) The total cost of the works is estimated at \$14,213,000, and the annual charges on this, including interest at  $4\frac{1}{2}$  per cent. and a sinking fund for 50 years, would be \$1,204,623.



## ELECTROLYSIS OF STREET MAINS

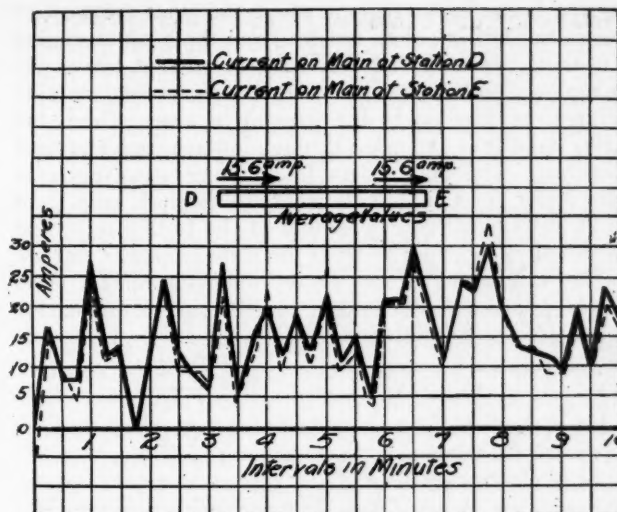
### Definition of Electrolysis—Sources of Stray Currents—Locating and Measuring Them—Destroys Mains and House Connections

Synopsis of paper before the American Water Works Association by  
ALFRED F. GANZ, M.E., Professor of Electrical Engineering,  
Stevens Institute of Technology.

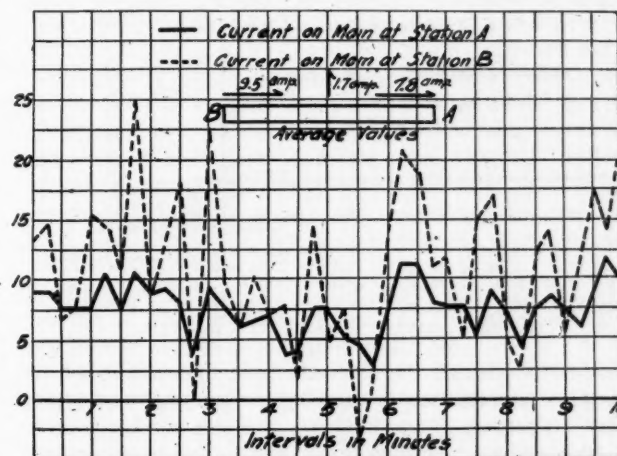
ELECTROLYSIS is defined as chemical decomposition by means of electric currents. Stray electric currents escaping from grounded electrical distribution systems which reach underground pipes cause destruction from electrolysis where these currents leave the pipes for the surrounding soil, because soil is an electrolytic conductor. Theory and experience show that the weight of metal destroyed by electrolysis is independent of the voltage, except in so far as this determines the amount of current produced, and that this corrosion is directly proportioned to the amount of current leaving the pipe and to the time during which it leaves.

In practise the only serious sources of stray currents are single trolley direct-current electric railways. In these railways the running tracks are used as the return conductor, and for this reason they are connected to the negative busbar at the power station by return feeder cables; and there are many systems where there are no further return feeders. The running tracks of such single trolley railways are usually in contact with ground, and since there is a drop in voltage in the rails, current leaks from the rails to flow through ground, the amount of stray current depending upon the drop in voltage in the rails and upon the resistance of the path through ground. Since electric current can only flow in a closed circuit, all current which leaks from rails and flows to ground and on underground pipes must again leave these pipes where negative return feeder cables are connected to the rails, in order to flow back to the negative terminal of the generator and so complete the electric circuit. Where these stray currents leave these underground pipes to flow through the surrounding soil, electrolytic corrosion is produced, resulting in a destruction of 20 pounds of iron in one year for every ampere of current. It has been disputed whether the amount of destruction produced is always equal to the theoretical amount; a number of laboratory experiments made recently by the author under practical conditions with current densities as low as those found in practise on underground piping seem to indicate that the actual amount of destruction is always at least equal to the theoretical amount, and is often even greater than the theoretical amount. (An abstract of another paper giving the results of these experiments will appear next week in connection with the conclusion of this article.)

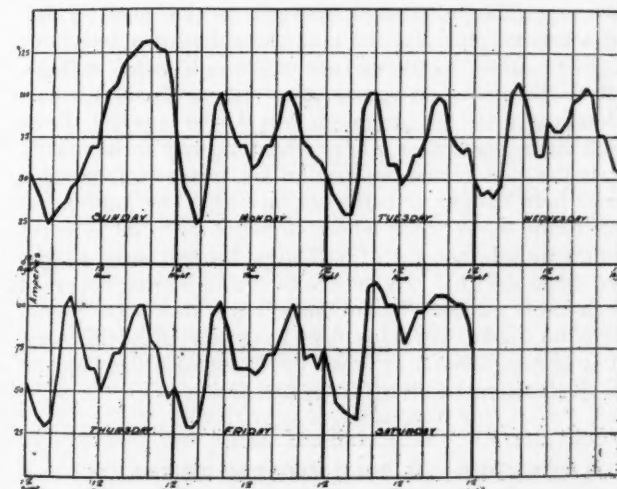
Since stray currents flowing through ground and through underground piping are caused by potential differences between the pipes and rails set up by the drop in voltage in the rails, the simplest way to determine the probable existence of stray current on underground piping is to measure the potential differences between pipes and rails. Such measurements made throughout a system constitute the usual potential survey. These potential differences are, however, not a measure of the current flow between pipes and rails; as this is determined also by the resistance of the path through the intervening ground, and this resistance cannot be practically measured. Since the actual electrolytic danger of a pipe is determined by the amount of current flowing on the pipe, it is necessary to make current measurements at many points throughout a piping system. The existence and direction of current flow on a pipe can be determined from drop measurements between service connections, but the magnitude of the current flowing cannot be determined from such drop measurements. To determine the actual amount of current flowing, a length of pipe is exposed and the drop in potential along a known length of continuous pipe is measured, and this drop is divided by an assumed resistance for the included length of pipe.



SIMULTANEOUS CURRENT MEASUREMENTS AT TWO STATIONS ON PIPE WHERE THERE IS NO CHANGE IN CURRENT BETWEEN STATIONS.



SIMULTANEOUS CURRENT MEASUREMENTS AT TWO STATIONS ON PIPE WHERE THERE IS CHANGE IN CURRENT BETWEEN STATIONS.

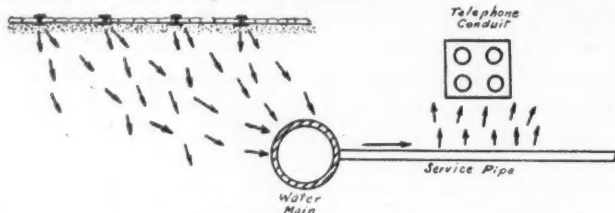


STRAY CURRENTS ON WATER MAIN, AVERAGED FROM TWENTY-FOUR-HOUR RECORDS AND PLOTTED FOR THE WEEK.

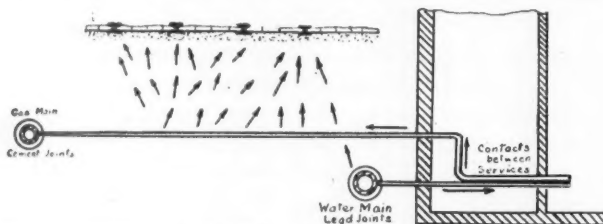
Since the positive potential of a pipe referred to rails, plus the negative potential of the pipe referred to rails, plus the drop in the pipe, is equal to the drop in the rails, the potential and current surveys enable one also to form an estimate of the drop in the rails, and thus to form an idea as to the condition of the railway return circuit.

After drop and current measurements have been made at a sufficient number of points, they are conveniently plotted on a mains map, and a study of this map will indicate where current is leaving the pipe. Such points will

always be found in the regions where the pipes are positive to the rails. Other points remote from the positive region will in most cases also be found where current leaves the pipes to flow to other pipes or to other underground metallic structures, or to flow to the ground in cases where the negative bus-bar is grounded through low resistance ground connections. The author has found large stray currents leaving water pipes in districts where these pipes were from 10 to 25 volts negative in potential to the trolley rails, and more than five miles away from the railway power station. At points where the current survey indicates current leaving, excavations should be made and the pipe examined for evidence of electrolytic corrosion.



EXAMPLE OF SERVICE PIPE NEGATIVE TO TROLLEY RAILS AND DESTROYED BY ELECTROLYSIS, DUE TO CURRENTS FLOWING FROM RAILS TO PIPE AND FROM PIPE TO TELEPHONE CABLE SHEATHS.



STRAY CURRENTS ENTERING AND LEAVING BUILDING THROUGH SERVICE PIPES AND CAUSING FIRE HAZARD; ALSO DESTROYING GAS SERVICE PIPE BY ELECTROLYSIS.

Besides the danger from electrolytic destruction of the pipes, stray currents where they flow on underground piping systems frequently enter buildings through service connections and produce a serious fire hazard. For example, currents may flow into a building through a water service pipe, then flow from the house water piping to the house gas piping, and then out from the building through the gas service pipe. Such contacts between service pipes or between a service pipe and the lead sheathing of a telephone or a power cable, frequently occur through metal ceilings, or where the pipes rest against each other. Since dangerous heating may be produced where the current flows through such contacts or where vibration may momentarily separate the contact and produce an arc, nearby inflammable material is in danger of being set on fire. The author has in fact found many cases where currents up to 30 amperes were flowing into and out of buildings through service pipes or lead cable sheaths. Evidences of arcing having occurred between such contacts in buildings have also been found. There is no doubt that many fires have started in this way, but it is always difficult to prove the cause of a fire because of the destruction resulting from the fire.

(To be Continued.)

### LECTURES ON THE SMOKE PROBLEM

REFERENCE has previously been made by us to the fact that the University of Pittsburgh has been carrying on an investigation of the smoke problem through its Department of Industrial Research. At the present time this investigation is being conducted by a staff of twenty-five specialists, seven of which are giving their entire time to the work. Some are studying the effect of smoke and soot on the atmosphere, on the weather, on plant life, buildings and public health; others are investigating the economic damage, and still others are studying mechanical devices for preventing or abating smoke and inquiring into the chemistry and physics of smoke, into the State and city laws concerning the nuisance which it creates and into the

history of the subject as a whole. Several of the members of the staff have arranged lectures on the subject, these covering most of the subjects just referred to; this course having been arranged by Dr. R. C. Benner of the university in response to requests made by a large number of American cities that the department furnish them with information on this subject.

### POPULATION BY METROPOLITAN DISTRICTS

THE Census Bureau has published a bulletin giving the population of the metropolitan districts of the United States, each of which has for its nucleus a city of more than 200,000 inhabitants. In some cases the municipal boundaries of our large cities give only an inadequate idea of the population grouped about them as urban centers. There are suburban districts about many of them containing dense populations which, in a certain sense, are as truly a part of the city as those which are under the municipal government. In a sense the population of the metropolitan district is a more accurate measure of its relative importance than that within the city limits; and the arrangement of cities according to populations might, it is readily seen, differ from that which would be obtained by including the entire metropolitan district.

In general the Census Bureau has included within the metropolitan population of each of these large cities all the territory located within ten miles of the city boundaries, excluding any areas which contain less than 150 to 200 inhabitants per square mile, but including the whole of a civil division if more than one-half of its population or area falls within the ten-mile limit.

The populations of the cities proper and of the metropolitan districts by the 1910 census, and arranged in the order of the population of the entire district, are given as follows: New York, 4,766,883; 6,474,568. Chicago, 2,185,283; 2,466,921. Philadelphia, 1,549,008; 1,972,342. Boston, 670,585; 1,520,470. Pittsburgh, 533,905; 1,042,855. St. Louis, 687,029; 828,733. San Francisco-Oakland, 567,086; 686,873. Baltimore, 558,485; 658,715. Cleveland, 560,663; 613,270. Cincinnati, 363,591; 563,804. Minneapolis-St. Paul, 516,152; 526,256. Detroit, 465,766; 500,982. Buffalo, 423,715; 488,661. Los Angeles, 319,198; 438,226. Milwaukee, 373,857; 427,175. Providence, 224,326; 395,972. Washington, 331,069; 367,869. New Orleans, 339,075; 348,109. Kansas City (Missouri and Kansas), 330,712; 340,446. Louisville, 223,928; 286,158. Rochester, 218,149; 248,512. Seattle, 237,194; 239,269. Indianapolis, 233,650; 237,783. Denver, 213,381; 219,314. Oregon, 207,214; 215,048.

Arranged according to city populations, these occur in the following order: New York, Chicago, Philadelphia, St. Louis, Boston, San Francisco-Oakland, Cleveland, Baltimore, Pittsburgh, Minneapolis-St. Paul, Detroit, Buffalo, Milwaukee, Cincinnati, New Orleans, Washington, Kansas City, Los Angeles, Seattle, Indianapolis, Providence, Louisville, Rochester, Denver, Portland.

An inspection of this list shows that an arrangement of these cities in the order of the population of their political rather than their metropolitan areas, would place Boston in the fifth rather than the fourth place, and Pittsburgh in the ninth place rather than the fifth. Detroit also would move up two places in the list, Milwaukee one place, Washington, New Orleans and Kansas City would rank above Providence, and Seattle and Indianapolis would move up to a position ahead of Louisville. It would seem as though the population of the metropolitan district was really the correct one to use in comparing the importance of these cities, since the political boundaries are merely arbitrary ones, some cities like Chicago having taken in practically all of the territory contributing to its greatness, while others like Pittsburgh contain within their boundaries little more than one-half of such territory.



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JULY 11, 1912.

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## Spacing of Fire Hydrants

REFERENCE was made last week to several uses which could be made of the water works statistics published in that issue and the one two weeks before, among such uses being a determination of the average spacing of fire hydrants. This particular calculation we have made from this table, comparing the total amount of water mains and the total number of fire hydrants in all of the cities; also the extensions of mains laid last year and the number of fire hydrants added. The cities included in this calculation contain nearly 114 million feet of mains, and are of all sizes, from Chicago with its 2,362 miles of mains to small towns containing only two or three miles. Averaging all of these, we find that a fire hydrant is furnished for each 667 feet of main; while of the extensions laid last year 788 feet were laid for each fire hydrant set. Stated in another way, the total number of fire hydrants average about 7.9 per mile of main.

The fifteen largest cities, each having more than 300 miles of main, contain together a little over one-half of all the mains recorded in the table and consequently the practice in those few cities would have as much effect

on the average as that in the several hundred smaller ones. Taking these fifteen together, we find the total number of fire hydrants averaging a little over 9 per mile. Considering them individually, we find St. Louis leading with 13.8 per mile, while Kansas City has 12.2 per mile, Cleveland 11.8, Boston 10.8 and Chicago 10.5. Buffalo and Philadelphia have approximately 10 per mile, Newark about 8 and Detroit about 7. The lowest of the fifteen is Louisville, with only  $3\frac{3}{4}$  hydrants per mile, or one for each 1,600 feet; while Baltimore's record is but little better, being  $4\frac{3}{4}$  hydrants per mile. If we exclude the extremes at each end, we find that the general practice seems to run about nine or ten fire hydrants to the mile, or one for each 500 to 600 feet.

We do not recall ever having seen a satisfactory estimate of the most desirable spacing for fire hydrants, or even that which would be most economical entirely aside from the effectiveness of the protection offered; in other words, a calculation of what spacing of fire hydrants would be least expensive, all costs being considered. To make such a calculation it would be necessary to consider the first cost of a fire hydrant, including the special casting in the main, the connecting pipe and valve in the same and the cost of the hydrant delivered and set. The annual cost would be represented by the interest on this sum, the depreciation based on the estimated life of the hydrant, and in addition the cost of maintaining the hydrant, which would include the frequent inspections (which every hydrant should receive, but which is neglected in some cities) the occasional repairs, thawing out, etc. As an offset to this cost we have to consider that the more numerous the fire hydrants, the less the amount of hose required, and the annual cost of the hose added to the annual cost of the hydrants should be a minimum to secure maximum economy.

Such a calculation involves determination of the first costs of hydrants and their appurtenances, and of fire hose, with an estimate of the useful life of each; also the cost of caring for both—inspecting and repairing hydrants, handling and drying hose, etc. We will give a practical illustration of such a calculation next week.

An additional argument in favor of closer spacing is that the shorter the hose the stronger the stream (the importance of this will vary in different cities) and the more hydrants there will be available for a fire; that is, the more effective will be the protection.

## American Road Congress

THE organization known as the American Road Congress will hold its first annual session in Atlantic City, from September 30 to October 5, announcement to this effect having been made by Logan Waller Page, director of the U. S. Office of Public Roads, who is the president of the congress. This congress represents the consolidation of the American Association for Highway Improvement, the American Automobile Association and thirty-five or forty more important road organizations. The National Association of Road Machinery and Material Manufacturers will hold its exposition of materials and equipment at the same time and place, and will show to visitors of the convention the latest developments in machinery and methods for road construction. The U. S. Office of Public Roads will present an exhibit consisting of a complete set of miniature models illustrating every known type of road, and working models of rollers, crushers and various equipment operated by tiny electric motors.

The American Automobile Association is arranging tours from all important cities to converge in Atlantic City on Road Users' day, among these being those who are striving for an international highway extending continuously from Quebec to Miami, Fla.

## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

### ROADS AND PAVEMENTS

#### Brick Pavement Needs Repairing

Walden, N. Y.—The brick pavement on Main street is becoming sadly in need of a covering of cement to fill in the space between the blocks. This work was ordered done by the Board of Trustees at a meeting over a month ago, but thus far nothing has been done. This pavement was laid about nine years ago and no improvements or repairs have been made to it during that time.

#### Will Continue Work Until Fund Is Exhausted

Albany, N. Y.—Attorney-General Carmody has nullified a recent opinion which would have had the effect of requiring the suspension of payment on work done on expedited improved highway routes totaling about \$13,000,000. In a sub-opinion, the Attorney-General holds that the State Highway Commission may proceed with work on these routes and make payments accordingly, if it believes that there is sufficient money on hand with which to pay for it. The commission announced that it intends to construct these roads until the appropriation now available is exhausted and appeal to the Legislature for more funds with which to build the remaining portions of the incomplete roads.

#### Pittsburgh Improving Many Thoroughfares

Pittsburgh, Pa.—The city of Pittsburgh is spending \$500,000 in widening its principal thoroughfares radiating from the downtown business district. Topographical obstacles which long had been considered insurmountable are being removed and broad avenues have been converted from narrow ways, which hitherto hugged the steep bluffs or ran their cautious way along the banks of the rivers. The most picturesque piece of work is that of widening Second avenue, where this street for more than a mile threads the base of Boyd's Hill. Second avenue connects the downtown section with the Glenwood and the South Side mill districts, and is one of the main arteries of traffic in the city. For more than 100 years it has been a narrow road with scarcely room for two teams to pass. On the south side were mills, warehouses and a few dwellings, while on the opposite a row of dilapidated houses clung to the cliff. The houses have been razed and the street is being widened by cutting more than 20 feet off the face of the cliff. West Carson street is being improved by filling in more than 30 feet and erecting a concrete retaining wall along the Ohio River. Similar work is being accomplished on South Eighteenth street extension, where hollows are being filled and the cliffs are being shorn to make way for a wide thoroughfare. Atherton avenue has been extended across Junction Hollow to open a way connecting William Pitt boulevard with the Shadyside residential district. Here the improvements call for a magnificent concrete bridge spanning the Baltimore & Ohio Railroad in Junction Hollow.

#### Butts Convicts Build Handsome Highway

Jackson, Ga.—The Butts County chain gang is building from Jackson to Indian Spring and from Indian Spring to the Monroe County line one of the finest roads in the entire State. The road force has been working in that vicinity for several weeks and will be engaged on this road for some time yet. This is probably the most traveled road in Butts County and is used as much as any highway in the State, particularly during the summer season, when thousands of visitors motor to Indian Spring. It was this fact that led County Commissioner J. O. Gaston to make this road a model. The road has been widened to 28 feet, all of the grades have been reduced and the thoroughfare has been otherwise improved.

#### Places Fountains on All Corners of Intersections

Salt Lake City, Utah.—On suggestion of the superintendent of waterworks, the city commission has recommended fourteen new sanitary drinking fountains on Main street and four new ones on State street. On Main street one new fountain will be on each corner at the intersections of Main and South Temple, First, South Second South and Third South, with two more lower down, one in front of the postoffice and the other at Main street and Exchange Place. There is now one fountain at each of Main and South Temple, First South and Third South. No city, so far as is known, has provided fountains on each corner of a street intersection in the business district.

#### Improving County Roads

Waterloo, Ia.—Grading the leading highways of the county, in conformity with profiles prepared by County Surveyor Barber, is being carried forward rapidly in the fourth supervisor district. The Hudson road, from Wilson Junction to Hudson, has been greatly improved. Automobile owners have given many compliments relative to this piece of highway. The grading gang, under the direction of Supervisor Johnson, is now working south of Hudson. After that district has been improved the grades will move to the third district, composed of Waterloo township. The money expended for improvement where these profiles of the highway have been prepared by Mr. Barber, comes from the automobile license tax, which is proportioned among the various counties of the State. It is the intention to continue the general highway betterment until the main thoroughfares of the county have been made smooth and level, with good drainage. The hills are graded down and the earth taken from them is placed in the low lands. In this way all steep grades are avoided, and automobile owners may proceed without changing from high to low speed. Merely the grading is being done now, but later the roads will be surfaced with gravel just as rapidly as it is possible with the available funds.



SECOND AVENUE AT TENTH STREET, LOOKING WEST.



WEST CARSON STREET AT GLENMAWR AVENUE.



### Report 197 Bridges Are Needed

Richmond, Ind.—According to the reports of the township assessors to Auditor Bowman, there are 197 places in the county that need bridges of one kind or another. One-third of the roads of the county are free turnpikes. Almost one-half of the free turnpikes are in Wayne township, which contains 106 miles, while the rest of the county has 133 miles. There are 3.5 miles of road that have been macadamized and improved under the three-mile act, passed by the last legislature. The free turnpikes under the county supervision is estimated at 239.25 miles, while the gravel roads under township supervision are given at 674.5 miles.

### Contractors Loaded Up With Work

Indianapolis, Ind.—The board of public works, temporarily, has suspended its rule that contractors for street improvements must begin work within twenty-one days after obtaining a contract. This action has been taken because every contractor in the city has enough work on hand to keep him busy the remainder of the year. About 150 contracts have been let this year. In the past it has been the custom to scatter the letting of contracts throughout the entire year, but this year practically a year's work was let at the beginning of the season. It is estimated that close to \$1,000,000 worth of work has been let this season. One of the features of the contracts has been that very little opposition has developed among the property owners interested. It has not been necessary in a single instance to ask the city council to ratify the action of the board over the protest of a majority of resident property owners. Every contract let has been with the consent of a majority of resident property owners. It is probable that few contracts will be let during the remainder of the season, except for a number of small sewers.

### Work Started on Henry Hudson Drive

Englewood, N. J.—Palisades Interstate Park Commission has at last taken definite steps for the construction of the Henry Hudson Drive, which has been designed to traverse the rock-hewn shore of the Palisades from the southern boundary of the Interstate Park at Fort Lee to its northern boundary at Piermont in New York State. This road was planned and complete surveys for it were made in 1903. It was not until 1909, however, that the State of New Jersey, through whose territory the greater part of the drive will run, by legislative enactment, authorized the construction of the driveway. While the Legislature approved the plan it made no appropriation that year to enable the commissioners to proceed with the work. Subsequent appropriations, amounting in all, including this year's appropriation, to less than \$350,000, were made by the State for all purposes of the Interstate Park Commission. Fortunately private citizens have been more interested in preserving the scenic beauty of the Palisades and making the Interstate Park excel any park reservation in the world, and they have contributed not only thousands of acres of land upon the Palisades, but more than \$5,000,000 in cash for the use of the commission, while the State of New York, in whose territory but a small part of the park lies, has given the commissioners \$400,000 for preliminary work upon the park, and has by vote of its people, ordered payment of \$2,500,000 for the Henry Hudson Drive, providing New Jersey will pay its fair share of the cost. New Jersey has not yet matched the generosity of New York State and private contributors, but the Interstate Park Commissioners do not despair of eventually securing substantial State aid and with the small amount of New Jersey funds available, will begin actual construction work upon the drive, or rather upon the main New Jersey approach of the drive. The road, as designed, is a fine piece of engineering work, as it will mount the face of the Palisades without at any point having a grade which will be difficult either for horse or motor. To accomplish the 500-foot ascent of the face of the Palisades the road will traverse a mile. The road will be of solid masonry and will be paved with granite blocks. It will be protected on either side by a parapet wall of masonry three and one-half feet in width. It will be brightly lighted along its entire length. The engineer who planned the road and will have charge of its construction is Watson G. Clark, of Tenafly.

### Build 24 Miles of Road in Two Days

Watertown, S. D.—Grime upon their faces and weary in every muscle unused to manual toil, men of all vocations in Watertown returned to the city after the first day's volunteer work upon the Meridian road through Codington County. "Half done was the battlecry, and from each came a declaration that he would return the next day to finish the undertaking before sundown. In partial celebration of the first day's successful trial of road building by business men, the clans were called together and the results of the day canvassed. It was found that some miles were nearer completion than others. Some of the miles, such as the notorious Carpenter hill just south of Watertown, were behind schedule owing to a lack of sufficient force. A redistribution of men, teams and apparatus was made for the second day's work, throwing the greater number into spots requiring the most labor. State Engineer Lea completed his trip over the entire route. The various needs of the individual foreman of one-mile construction were noted by him and he directed the changes for the second day. The first day's toil was accomplished without mishap of any description. Twenty-four miles of road were fully half completed when the gangs quit at 6 o'clock, in spite of the fact that the day was exceptionally hot, especially in the afternoon when the thermometer reached 102 in the sun. Inside of Watertown four big gasoline tractors were used. Two pulled graders, and two long gravel trains. Seventeen carloads of gravel were unloaded by this means in the afternoon and twice that number were handled. Machinery for this work was provided by firms which have branch distributing houses in Watertown. The completion of the road is to be made the occasion of a celebration in Watertown. All of the crews are expected to come into the city for a banquet to be served by the Commercial Club. Addresses are to be made by Chairman Stokes and State Engineer Lea. Several prominent citizens who have been busy with shovels will tell of their experiences and why they engaged in this good roads movement.

## SEWERAGE AND SANITATION

### Excavating Sewers With a Buckeye Trench Machine

Vincennes, Ind.—The Buckeye trench machine which the sewer contractors have been using on lower Seminary street has reached Seventh street, and will be started on a journey of over a mile to Jefferson avenue, where it will again be put in operation, the idea of the move at this time being to get a sewer down in Jefferson before the street improvement contractor starts graveling the street, a work that is to be commenced at an early date. The chances are the trenching machine will not be brought back up town as the soil in North Vincennes, and particularly the extreme north end of the city, is more easily worked in by machinery than the uptown streets, where there is a bed of gravel and fine sand encountered. Out in North Vincennes the contractors feel they can work the machine to its fullest capacity, which is about one thousand feet of trench a day. The sewer is laid in the trench as the trench is dug and can be immediately filled. Those North Vincennes streets which were just recently graveled and which are as yet unpacked will probably be scraped before the sewer trenches are dug, so that none of the gravel will be lost.

### South Carolina Town Solves Mosquito Problem

Hartsville, S. C.—This town has for several years past annually employed measures for the extermination of the mosquito which other communities may well emulate. Its health board first distributed to all householders circulars pointing out the dangers of mosquitoes and recommending screens and constant supervision of premises to prevent breeding. Then the council surveyed the entire city, drained low places where rain water accumulated and made weekly inspections of all premises and ditches in town, putting kerosene regularly on any water that could not be drained or emptied (an ounce of kerosene for each fifteen square feet of water surface). Most of the breeding places were found in back yards. Dr. W. Egleston, the health commissioner, reports that malaria, though very prevalent a decade ago, is now a practically negligible disease. The inhabitants of Hartsville, it is said, now sit on their unscreened porches in the evenings with no discomfort from mosquitoes.

### Fear Plague, War on Rats

New Orleans, La.—Steps have been taken to combat the growing feeling of alarm that bubonic plague will find its way here, and city, State and Federal authorities will cooperate in a vigorous campaign to make such an event improbable. At the State board of health offices there will be a general conference upon the subject. Dr. Oscar Dowling, chairman of the State board, has issued a pamphlet cautioning against the danger from infection through vermin and rats on ships from Porto Rico and Cuba. With the millions of rats in New Orleans (their great number was discovered when the recent river floods drove so many from the wharves back into the older business and residence section of the city) it is realized that the problem may prove serious. Several ships due from infected ports will be at the mouth of the river until they have been fumigated and the rats aboard killed.

### Tampa Commences Sanitary Campaign

Tampa, Fla.—The city is engaged in a crusade to enforce the laws relating to sanitation. Starting some time ago with the dairies the pure foods department of the city government did some splendid work, compelling the dairymen to adopt a very high standard both as to the health of the cows and conditions surrounding the milking and care of the fluid. Recently attention was turned to the markets, hotels, restaurants, boarding houses and fruit stands. There is an ordinance as well as a State law in reference to the screening of these places and the covering of fruit and vegetable displays to prevent fly contamination. Inspectors were sent to all of the places covered by the law and the owners were notified to comply with the requirements of the law within a given time, at the same time being given copies of the law. Most of them were prompt in compliance. Those who have not complied are being brought to court and fined, and in addition are compelled to comply with the law. While Tampa may not be converted into a veritable copy of the alleged "spotless town," it will be no fault of the city authorities if this community does not class A.

### To Take Steps to Free Streams of Sewerage

Washington, D. C.—First steps looking to the freeing of District streams of sewerage from Maryland communities that drain into the Rock Creek and Anacostia valleys and toward the Little Falls branch will be taken this summer when the Maryland State Board of Health will make a survey of the drainage areas surrounding the communities so that sewers may be constructed to connect them with the District's interceptors. Announcement of the intention of the board to make the survey this summer and of the formulation of plans by the commission appointed by Governor Goldsborough of Maryland to investigate the drainage problem was made last week. William T. S. Curtis has been made chairman of the commission and Jackson H. Ralston, vice-chairman. T. Howard Duckett is secretary. The commission is composed of representatives of Prince Georges and Montgomery counties, Md., and of the Maryland Board of Health, the representatives of the latter being Dr. William H. Welch, president, and Dr. Marshall L. Price, secretary. The plan adopted is a co-operative one between the members of the Board of Health and the representatives of the two counties. The former will conduct the sanitary survey, and will report to the full commission in the fall. Two subcommittees have been appointed, and these also will report in the fall. One of them will study the question of the general disposal of sewage. The other will look into the matter of taxation and investigate how the expense of constructing the sewers can best be met. It is stated that the full commission, after receiving the various reports and outlining a definite program of procedure, which will be submitted to the legislature, will take the matter up with District officials. The local government has signified that it will be willing to handle the sewerage of the Maryland communities, provided it is delivered to the District interceptors. Asa E. Phillips, District superintendent of sewers, is interested in the proposition, and, according to a statement by Chairman Curtis, of the Maryland commission, will be called on to co-operate with the commission. Mr. Phillips has suggested the importance of some arrangement being made with the Maryland authorities to prevent the pollution of the District's streams with sewerage, in several annual reports to the District commissioners.

### To Enforce Sanitary Ordinance

Fort Worth, Tex.—Chief Renfro has issued an order to the city sanitary officers to make careful inspection of the city blocks in the territory assigned to each and report on the sanitary condition of the block. If found in an insanitary condition the exact condition is to be stated and the name of the party or firm owning the premises is to be reported with the statement of the condition.

### Sewer Repairs Will Be Expensive Job

Lynn, Mass.—From reports received from the scene of operations at Magnolia avenue, where 250 feet or more of 24-inch sewer pipe were recently shattered to fragments by a cave-in due to insufficient foundation for the big trunk line which forms one of the main arteries of the Lakeside drainage project, Street Commissioner McPhetres says the indications are that the work of properly constructing this part of the system will cost so much that it may be necessary to stop activities on Euclid avenue in order to pay the bills out of this year's appropriation of \$10,000 raised by bond issue. "I would not venture to estimate the cost now," said Mr. McPhetres. "It seemed to me when the pile driving began that we might escape for less than \$3,000 or \$4,000. My impression was that bottom would be struck at a depth of about 40 feet, but our experience has proved that the piles have been driven down 120 feet in one place. The depth ranges from 120 to 90 feet. I don't believe we can expect to reach a safe foundation at a depth of less than 120 feet." The piledriving is being done under contract with a concern from East Boston. The piles are each 40 feet in length, and the cost of driving each one is \$8.80, this being upon the basis of 22 cents per foot. If the pile driving does not reach or exceed 3,000 feet, then the price per foot is 24 cents. Martin L. Call has charge of the gang of drainage division men who are employed on the job.

## WATER SUPPLY

### Test Water Each Month

Duluth, Minn.—Arrangements have not yet been completed for a survey of the conditions which affect or may affect the Duluth water supply. The board of water and light commissioners is still in correspondence with Dr. H. M. Bracken, secretary of the State Board of Health, and another meeting will probably be arranged soon. In the meantime the monthly tests of water will be continued in the State laboratory. The tests recently made show that the water is pure. The board will probably make arrangements for a complete survey soon in order to get information which may be valuable in shaping the future policy of the city in the protection of the water supply. Members of the board say that the government report does not contain any new information, but merely corroborated the views held by them formerly.

### Municipality Will Tax Company's Water Mains

Altoona, Pa.—The Allegheny Water Co. has made its return to the city controller setting forth the number of miles of water mains laid in the highways of the city of Altoona, under the provisions of the ordinance which provides for the inspection of such mains and the imposition of a tax of \$30 per mile. The company reported that it has three miles of mains within the city limits, making its tax amount to \$90. The statement was, however, filed under protest, which leads city officials to the belief that it is the intention of this company, perhaps in conjunction with other companies that come under the provision of the law, to institute proceedings to test the legality of the ordinance. Besides the Allegheny company, the Penn Central Light and Bell Telephone companies are the only ones that have yet complied with the provision of the ordinance, which requires that the return shall be made to the city controller on or before the first day of June. At the same time a similar return must be delivered to the city engineer with a map attached, showing plainly and in detail the exact location, size and depth of all water mains or conduits. Among the companies that have not yet complied with the ordinance are the Altoona Gas Co., the United Telephone Co. and the telegraph companies. The gas company will doubtless be the most heavily taxed. The city will derive a revenue of more than \$500 per annum from this ordinance if the ordinance is upheld by the courts.



**Sparrows Are Nuisance at Chicago Pumping Station**

Chicago, Ill.—Commissioner of Public Works McGann is considering a novel requisition from Phillip Petrie, chief engineer of the Springfield avenue pumping station. He wants a shotgun to shoot sparrows. Petrie asserts that the pumping station floors, ceiling and walls have become littered with sparrow nests, and the sparrows bother the crew in their work. The shotgun issue is still undecided, but it was admitted Petrie's request may be granted and a sharpshooter thrown in.

**Borough Water in Bad Condition**

Rockaway, N. J.—The borough water for several days last week was unfit for drinking and cooking purposes, being mixed at times with a thick muddy slime. The cause of it has not yet been ascertained. A snapping turtle was forced through a length of 2½-inch fire hose at the Hoagland foundry fire.

**Cleaning Out Water Mains in Heart of the City**

Hartford, Conn.—At the last meeting of the water commissioners a vote was passed instructing the engineer of the department to arrange for the cleaning out of the interior of three miles of the principal mains in the city, the idea being to make a thorough test of a machine that is made for the purpose, and later if it proves a success to apply it to the remainder of the mains. The Nepaug work is still in the hands of the counsel for the water board, former Corporation Counsel William Waldo Hyde and Edward M. Day, and it will be another week before the legal formalities have been complied with to the extent that the board may appear in court asking for the condemnation of the land needed for the site of the storage reservoir. Sprague & Henwood, of Scranton, Pa., are drilling on the dam site under the terms of their contract. There is a possibility that the supreme court may eventually be called upon to pass upon the constitutionality of an act giving the city the power of eminent domain in the condemnation of lands for a compensating reservoir.

**Wyandotte Water Bad**

Wyandotte, Mich.—According to Secretary Robert L. Dixon, of the State Board of Health, Wyandotte water is dangerous because the citizens of the down river town secure their water from the Detroit River and receive the full disadvantage of the sewage of Detroit, which is dumped in the river. Secretary Dixon has just returned from an inspection of the purification plant installed at Port Huron so as to eliminate the original source of typhoid there. The epidemic is now practically under control. Physicians state that a similar plant is much needed at Wyandotte. According to them it is little short of marvelous the city hasn't been affected with a typhoid epidemic. St. Clair is another city in a dangerous location, receiving as it does, all the sewage of Port Huron. Detroit is not confronted with the same danger because the bacteria are thoroughly disseminated by the time they get through Lake St. Clair.

**Water in Largest Reservoir Is of Questionable Purity**

Montgomery, Ala.—As a result of the continued infection of reservoir No. 5, the largest water tank in the city, this source of supply may be condemned and its use discontinued. The most recent report of City Bacteriologist B. A. Taylor to the city commission shows that specimens taken from the reservoir, and inoculated for 48 hours, showed the following results: Bacteria per cubic centimeter, 920; tests for colon bacillus, negative. Tests made of the water from the general supply showed 156 bacteria per cubic centimeter. Reservoir No. 5 has a capacity of 5,000,000 gallons. This reservoir has long been a bone of contention, and a number of examinations have been made of the water, all showing that there was more or less infection. Numerous causes have been suggested, none of which seem to have fully explained the infection. The recent examination of the water contained in the reservoir will probably result in the commission ordering the reservoir discontinued. Every possible effort will be made, it is understood, to relieve the cause of infection, and before the water is again used this important source of supply will have to have a clear record. Repairs will be made on the reservoir, and the County Health Society and the State bacteriologist will be asked to co-operate with the city bacteriological department in determining whether or not the reservoir is in good condition after the repairs have been made.

**Completion of Main Will Relieve Water Shortage**

Spokane, Wash.—With the completion of the new North Side force main probably a month or more off, the north hill districts are beginning to suffer from a water shortage. One evening last week several localities on the hill were short of water two hours and the pressure was low throughout the district all day. "There can be no material relief for the north hill districts until the big new main is completed," said Water Superintendent Alexander Lindsay. "We will put on another emergency pump at the up-river station, which may help some, but it is not a matter of pumping. The mains on the hill are not capable of carrying sufficient water for the entire district when everybody is using water. The new main, intended to relieve this, will be completed, we hope, between the middle and end of July. This will afford the relief needed." The north hill districts have been sufferers from water shortages for three years.

**Macon Is Constructing Many Extensions**

Macon, Ga.—Although the work of extending the water mains through the newly annexed territory of the city has been in progress less than two months, nearly every street in South Macon is supplied with the mains, and according to Chief Engineer Langworthy, who has charge of the work, the extensions in the southern section will be completed in another month, and before September 1 the people of this section will be supplied with water. Since May 4, when the extension work was started, about 30,000 feet of pipe have been laid, covering every street in South Macon except three in the extreme western portion of the section. In addition to the extensions 2,300 feet of force pipe to supply the mains in the new territory have been laid. The work is being done by the J. B. McCreary Co., of Atlanta. Two weeks ago the board ordered that pipe be secured for Vineville, and in a short time the laying of mains on six side streets will begin. The first work will be on Buford Davis place.

**Wants Water Meters Installed**

Trenton, N. J.—Engineer of Sewers Alfred Gregory before the City Planning Commission read a paper advocating the installation of meters as a method to lessen the amount of waste water in the city. Mr. Gregory estimates that with the repairing of the leaks, which would be discovered by periodical inspection, and with the installation of meters, Trenton's per capita consumption of water could be cut in half, which would mean the reduction of per capita consumption per day from 180 gallons to 90 gallons. With this decrease in consumption, Mr. Gregory points out, a saving in operating expenses of at least one-third and very probably two-thirds of the present cost, which, in other words, would diminish the cost of operating expenses \$30,000 per year. Mr. Gregory says that on the cost of installing meters for domestic use, the cost of their maintenance, also figuring in the interest on the investment of \$324,000 to put in meters, and he finds the yearly cost charged up to metering would aggregate \$28,220; therefore, the yearly charge against meters would be more than offset by the economy of operating expenses.

**Water and Light Departments Criticized**

Pittsburgh, Pa.—Utter laxity of supervision or inspection in the water and lighting departments of this city is alleged in testimony given by John I. Clowes, of the New York Bureau of Municipal Research, against Public Works Director Joseph G. Armstrong. Clowes said that in the Water Bureau the money was being poured down the drains. Pittsburgh, he said, had a per capita consumption of 235 gallons a day, while New York's was 95, and London, England, 32 gallons a day. He ascribed the difference to leakage and waste here. Clowes said there was a lack of intelligent records in the Bureau of Water; that the payroll records were deficient, and that it was almost impossible to trace the time of an employee's service by these rolls. He said there was an absence of service records all through the city. The Bureau of Light, the witness said, was not living up to the contracts with either the Allegheny County Light Co., or with the company furnishing the gas. No tests are being made and the superintendent and chief clerk told the witness that no tests had been made for three years.

### To Move 36-Inch Water Main

Syracuse, N. Y.—A section of the 36-inch water main in Midland avenue will have to be removed to make way for the Onondaga creek intercepting sewer as the main is on the same level as that where the sewer is to be built. The course of the sewer cannot be changed, so the main must be. The plan being worked out by Consulting Engineer George H. Beebe is to put in a new section either above or below the sewer level and to connect each end with the main by double elbows. The main passes under the creek and will have to be moved when the channel is deepened. The main is one of two running from Woodland reservoir which supply practically the entire city, this main serving the southern portion. In order not to cut off the supply while the alteration is being made, Mr. Beebe has arranged to close and open gates in the pipes so that the other main will furnish water for the whole city.

### City Without Water for an Hour

Gloucester, Mass.—One of the most serious water breaks in recent years occurred one afternoon of last week when the old cement lined pipe, used as a sort of secondary supply main to the entire city gave way on Western avenue, near Kent Circle, shutting off the whole city from its water supply and fire protection for an hour between the hours of 4 and 5 o'clock. The city is supplied with water by two mains from the reservoir on Bond's hill, one the old cement lined pipe laid for the Norman Water Co. a good many years ago, and the other new 20-inch cast iron main laid recently by the water department. The break occurred in the old cement lined pipe, and the leak was so bad that it took all the pressure out of the other main. The accident happened just before 4 o'clock and the water without any apparent warning, suddenly burst forth in a huge fountain, tearing up the hard macadam highway like paper. The water department was immediately notified and men were rushed to the scene as quickly as possible. It was certainly fortunate that no fires occurred, for had a blaze got started just at that time, the result would have been disastrous, for there was not a drop to be secured except in the lower streets, Duncan, Rogers and Wharf streets still having it because of being low down. There was but very little pressure to the water, however. The gates controlling the cement lined pipe were shut off as quickly as possible, but an hour was consumed before the task was finished, the city being without its water supply in the meanwhile. The water came on again at about 5 o'clock, but it was thick and muddy with gravel. Fortunately no damage was done by the break except the washout of the highway.

## STREET LIGHTING AND POWER

### White Way for West Adams Street

Jacksonville, Fla.—Ornamental iron posts will be erected on West Adams street, which is to have a new system of street lighting. The work is in charge of the John I. Robinson Sales Agency and the Ingram-Graham Electrical Co., both well known local firms. John I. Bronson was the successful bidder before the association in the matter of ornamental iron posts. The design which he created for West Adams street has since its purchase been adopted by the New York City Art Commission, it is said.

### Will Refund Deposits

Spokane, Wash.—Roughly estimated, from \$10,000 to \$15,000 in deposits for service will have to be returned to consumers of gas and electricity in Spokane by the local public service corporations as a result of the going into effect this month of the new State public service rules. In addition, on what deposits are left with companies by consumers the companies will have to pay at the rate of 8 per cent. interest, 6 per cent. being the highest paid in the past. The Washington Water Power Co. has not paid any interest. The new rules provide that no company shall require more than the amount of an average month's bill as a deposit for service. Both the gas and electric companies have required this in the past. The companies have announced that, pursuant to the new rules, they will make readjustments in the deposits with all consumers who take it up with them.

### Inspecting Street Lights

Haverhill, Mass.—As the result of a conference between the municipal council and a committee from the Haverhill Advertising Club and the Haverhill Board of Trade, members of these organizations with others who desire to make the trip will take an automobile trip to Lowell, where a new style of street lighting is being given a trial. The council members express their confidence in the men who are putting their energy into this project which spells so much for the city and all will journey to inspect the new system. In the party which held the informal conference were all of the council members, President Emerson and Secretary Child of the Board of Trade; President How, of the Advertising Club; John H. Sayward and N. P. Cutler. President Emerson outlined the lighting proposition to the mayor and aldermen, and each of the other men present gave their ideas. The council appears enthused over the plan, and the trip to Lowell is expected to be an enthusiastic and instructive one.

### Pressure of Gas at Tip Regulated

New York, N. Y.—The Public Service Commission for the First District during the week served upon the companies furnishing gas in the Borough of Manhattan an order fixing the minimum pressure to be maintained by the companies and prescribing various restrictions upon the common variations in such pressure. The order provides that the pressure at the consumer's end of the company's service pipes should never be less than two inches water column. The opinion of the Commission, written by Commissioner Milo R. Maltbie, as the result of an extended investigation, states that the companies affected by the order have not attempted hitherto to maintain a minimum pressure in excess of one and one-half inches at the end of the service pipes, and that instances have been found where the pressure was less than this figure. The variations are also said to have been frequent and in many instances so excessive as to be annoying, if not actually dangerous. The order provides that on and after July 1, 1913, the maximum daily pressure variation, independent of momentary and pulsating variations in pressure, shall not exceed three inches water column on any two consecutive days. After July 1, 1914, the daily pressure variation is specified not to exceed two and one-half inches, and after July 1, 1915, not to exceed two inches water column on two consecutive days.

## FIRE AND POLICE

### Fire Protection Important in Locating New Main

Portland, Me.—Fire department officials and officials of the Portland Water District made an inspection of the territory in the vicinity of Auburn, Jackson and Summit streets and Allen avenue to determine the best location for the laying the new line of water main. Several propositions have been considered, but up to the present time none have been decided upon. The line will be a six-inch one, and it is the desire of those having the matter in charge to give the best service possible. A considerable amount of building is being done in that section of the city and one of the most important features to be considered is the location of hydrants that the best possible fire protection may be given property owners in that location. As soon as the committee decide upon a plan the work will be commenced at once as the order authorizing the new main has already been passed by the city government.

### Question Regarding a Private Fire Protection System

Duluth, Minn.—The board at its meeting decided to recommend to the city council that arrangements be made for taking over the fire protection system of the Pittsburgh Coal Co., and that the city pay rental on such hydrants as may be necessary to give adequate protection by the city department. The Pittsburgh company installed a private fire-fighting system some time ago. During a fire in the coal piles last winter, the company used water for which the board billed it at the lowest rate. The bill amounted to \$3,875. The company objected on the ground that as a taxpayer it is entitled to fire protection and should be allowed to use water necessary for that purpose. The board does not want to establish the precedent of furnishing water free to private fire protection systems and makes the suggestion to the council in order to avoid taking that action.



**AUTO APPARATUS NOTES****Importance of Gasoline Tractors Recognized in Cleveland and New York for Drawing Steam Pumping Engine and Other Heavy Apparatus—New York Type of Chemical Described.**

Cleveland, O.—Instead of discarding steam engines and other horse drawn equipment the department of public safety may gradually replace the front portions of these vehicles with tractors, thereby bringing about motorization of the department without throwing away material that has cost the city upward of \$500,000. If tractors are used the fire engines and trucks and hose carts will be driven by gasoline, but the old steam pumps will continue in use. Modern auto fire engines contain power equipment that operates the vehicle and the pumps. To test out the idea a tractor may be attached to the aerial truck stationed at No. 1's house on St. Clair avenue, N. E. Five horses are attached to this truck, and Secretary Stillman of the department of public safety estimates that the maintenance of these horses costs the city about \$3,000 a year. A complete auto fire engine is to be installed at the Ashbury avenue N. E. station, now in progress of construction. The department is planning to buy an auto engine and hose cart for the station at E. 93d street and Union avenue S. E.

Schenectady, N. Y.—Truck No. 1 recently converted into a motor-driven vehicle, made its first fire run last week. The result of the run was more than satisfying to the men of the fire department. The call came from box No. 23 at Front and Jefferson streets at 6:45 o'clock and the run was made to the box in four minutes. On the first run the truck was driven by Lieutenant Van Dermoore. Barney, the fox terrier at the central fire station, is expected to apply to Chief Henry R. Yates for a transfer to another station. As the truck left the station, Barney, as usual, started also. He kept alongside until the truck got around Crescent park, then he ran ahead, all the time barking. He got in front and failing to find any horses he immediately stopped barking and turned around and went back to the station, climbed up on his chair and refused to have anything to do with anyone. His nose is "broken." Now he is going to ask for a transfer to a station where they have horses only.

New York, N. Y.—The illustration shows one of a type of four chemical fire engines and hose wagons to be furnished by the International Motor Co. to the New York City Fire Department. This engine is built on a 2-ton chassis of the Standard Mack type, is equipped with steel body, with hose reel capacity of 1,000 feet of 2½-inch fire hose. The body is constructed of either standard hose body type construction or with flared sides and seats for the accommodation of the firemen. The chemical tank has a capacity of 30 to 40 gallons, and is equipped with Lally quick-opening and self-packing tops. The chemical hose basket is arranged to carry 200 feet of special 4-ply hose. Hand rails are provided running from rear of driver's seat to back step. The fire extinguisher equipment consists of two to three gallon brake bottle type mounted in polished brass holders on the rear step. Two heavy duck soda bags are provided. The lighting is by means of two 8-inch headlights, mounted on front spring, together with two side oil lamps on each side of the driver's seat. The electric headlight is provided with current from 60-hour ampere storage battery. The conventional locomotive bell is mounted on the back of the driver's seat or on dash, as may be preferred. The usual complement of firemen's axes, acid receptacle holders, etc., are provided together with tool boxes, one 12-foot ladder and one 20-foot extension ladder. The complete chemical hose wagon is mounted on pneumatic or rubber tires.

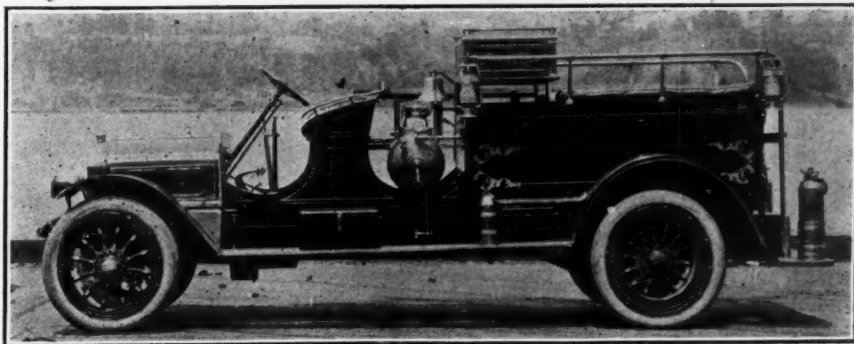
Schenectady, N. Y.—The Alco chassis and engine for the combination engine at the Central Fire Station has arrived and is now at the Central Fire Station, where it will be given tryouts before the apparatus from the combination wagon is put on it. The new machine is not as large as the big tractor recently installed to haul Truck No. 1, but

it will take the combination wagon to a fire anywhere in the city at a rate of from 28 to 30 miles an hour. The engine is four cylinders and develops about 40 to 50 h.p. It was shipped from New York by boat, and upon its arrival at Albany was unloaded and driven to Schenectady by Chief Yates and Driver Guy Evans, of the chief's car. On the road over it showed a maximum speed of 28 miles an hour and was not pushed to do this. The acquisition of the new machine will entirely equip the Central Fire Station with motor driven apparatus and make it one of the most modern and efficient of any fire stations in the country. There will be three motor vehicles at the station, the truck, combination wagon and the chief's automobile, all the product of the American Locomotive Co., Clark Witbeck being the Schenectady agent for the Alco car. The remaining horses will be sent to other stations and the body and running gear of the combination wagon as it now stands will be sent to station No. 8 for use on the wagon there.

New York, N. Y.—Fire Commissioner Johnson strongly favors the motorization of the fire department, but acknowledges it will probably be at least five or six years before these ideas will be fulfilled. The horse-drawn engines the department possesses are in excellent condition, and as a matter of economy the commissioner feels that he should continue to use them as long as possible. What Commissioner Johnson is planning to do, however, is to put the 200 pumping engines of the department on motor tractors. This would do away with many horses. Each engine could have its front truck replaced by a motor tractor for about \$2,000. In order to get competent chauffeurs for the motor apparatus, the commissioner will soon ask the Civil Service to create a new class of appointee, that of automobile engine driver, the incumbent being specially trained not only to drive, but to repair a motor truck, and the salary being \$2,000, instead of \$1,000, now paid to horse drivers in the department.

Waterbury, Conn.—Chief Snagg has ruled that the fire apparatus when answering an alarm within a quarter of a mile radius from Exchange Place shall maintain a speed of not exceeding 25 miles an hour and must lower the speed when turning corners or where there is any congestion. In returning from a fire 15 miles an hour will be the speed limit unless otherwise ordered, and the officers in command and the apparatus must be operated strictly within the speed laws of the State.

Durham, N. C.—The new automobile fire wagon that was ordered by the city several weeks ago has arrived safely and been unloaded. The new wagon is one of the best that could be obtained, and can run at a high rate of speed. Six men will be employed to stay at the fire station with the machine to answer all alarms, and it is hoped by the police and fire commissioners that the wagon will help in a large way towards extinguishing the fires. The new station where the apparatus will be located has been completed and faces Main street in Edgemont. The building is two stories high, and is made of the best material available. The bottom floor will be used for the keeping of the machine, and the top story will be used for the sleeping quarters. The doors to the building will be plenty large for the wagon to get in and out with the greatest of ease.



THE MACK COMBINATION CHEMICAL ENGINE AND HOSE WAGON.

## GOVERNMENT AND FINANCE

### Municipal Research Bureau Formed

Atlanta, Ga.—A branch of the Atlanta Chamber of Commerce has formed a finance committee with John E. Murphy as chairman. The object of the bureau is "a study in efficiency of city government." It will study the existing government in all its details, compare its efficiency with that of other governments, and suggest any changes that it believes will be of benefit to the city. Council strongly favors the committee and is encouraging the movement as much as possible, having itself appointed a committee to co-operate with the bureau of municipal research. It has been decided to ask Dr. William H. Allen, director of the New York Bureau of Municipal Research, and one of the leaders in such work, to assist the local institution in perfecting its plans. It is proposed to ask him to come to Atlanta and address a large body of representative citizens upon the subject.

### Favor New City Charter

St. Louis, Mo.—That an entire new charter for the city of St. Louis should be worked for, rather than a revision of the present charter, was the consensus of opinion among delegates from twenty-one St. Louis civic and business organizations at a meeting held at the City Club. Walter W. Birge, chairman of the Charter Revision Committee of the Civic League, which called the meeting, presided, and T. Hoke, assistant secretary of the league, acted as secretary. No definite action was taken, the delegates wishing to confer further with the members of the various organizations before meeting again at the call of the chair. M. L. Holman, who, with Julius Pitzman, represented the St. Louis Engineers' Club at the conference, and who was a strong advocate of the last proposed new charter, spoke strongly against any attempt to revise the present one. He declared this method would prove slow and otherwise unsatisfactory, and favored the submission of a new charter. The submission of a new charter would entail the election of a board of freeholders to draw it up. This would necessitate the passing of an ordinance ordering their election. The delegates appeared to believe such an election, if ordered, should be held about a year from now.

### City Receives Trolley Cash

Newark, N. J.—City Comptroller Parmly has received from the Public Service Railway Co. a check for \$159,196.38, representing 5 per cent. of the gross receipts from the various trolley lines operated partly or wholly in the city. The amount was based upon the track mileage, the system that has been in vogue since 1905, when there was an inquiry which ended in litigation that is still pending in the Supreme Court as to the proper method to be employed in determining the amount to which the city was entitled. An increase of \$10,939.93 over the amount paid last year in the check brought the total of the increases in the last five years to \$38,595.56. The total of the gross receipts on the twenty-two lines involved is shown as \$5,618,855.81. Of this amount \$3,183,927.67 was the sum upon which the city realized the 5 per cent. Besides the returns from the different lines, there are also included the receipts accruing from contracts with the government for the transportation of letter carriers and from chartered cars. The check covers the period from May 1, 1911, to April 30, 1912, and accompanying it was a statement setting forth the total receipts from each line, the proportion of them upon which the 5 per cent. is levied, the total track mileage and that much of it lying within the city. In 1908 the check sent by the company to the comptroller was for \$120,600.82. The following year an increase of \$6,395.18 was found, while in 1910 the increase was almost double that of the previous year of \$13,033.82. The increase in 1911 was \$8,226.63. In 1905 the city undertook to determine the best means of computing the amount that should be paid by the company. Car mileage and a stop-the-clock system were suggested, together with the track mileage method. The company insisted that the last named scheme was the most equitable and the question was put up to the Supreme Court. Since then the company has been paying on that basis and the city accepting it, without prejudice to either side in the controversy.

### Still Oppose Woman Mayor

Hunnewell, Kan.—The City Council held a meeting for the first time since the State Supreme Court rendered its decision in the famous ouster suit, and issued instructions to the woman mayor and three remaining councilmen to get busy. There was not much doing except that the councilmen once more refused to confirm the appointments of Mrs. Wilson. Mrs. Wilson offered the appointment of Mrs. Hilton as city clerk, and also named two councilmen to fill vacancies. None was appointed. Mrs. Wilson says the councilmen did not act rudely, but that they showed they did not care to transact any business.

### Wyoming Town Has Woman Mayor

Dayton, Wyo.—"Yours truly, Susan Wissler, Mayor of Dayton." Such is the businesslike signature of the new mayor of a little cow town in northern Wyoming, which a few weeks ago chose a keen-eyed, pleasant featured woman to preside over its affairs. Though Wyoming is the first equal suffrage State, no woman has ever before been elected mayor within its boundaries. Indeed, Mrs. Wissler is the second woman in the United States to be mayor, Hunnewell, Kan., having chosen a woman for that post a year or two ago. But the Hunnewell mayor was chosen more as a jest than in earnest, it is said, and she was opposed by the town council, whereas Mrs. Wissler was elected by a majority that testified to the business ability which secured the honor for her.

### Borough of Deal Adopts Commission

Deal, N. J.—The Borough of Deal, taking advantage of the Walsh Commission Government Act, has voted in favor of the commission plan. Fifty-one Deal voters balloted in favor of the new government and twenty stood by the present system. At the last election the registry list contained 108 names and the vote, totaling 71, was as heavy as was expected. Under the law a primary election will be held in four weeks in which preference for candidates for commissionerships will be made. Four weeks from that date the regular election will be held. Three commissioners will be elected, one of whom will be the mayor. The salary of the mayor will be \$500 annually, the other commissioners receiving \$250 each per year. A week after the election the new commissioners will take over the reins of government.

## STREET CLEANING AND REFUSE DISPOSAL

### Women Buy Water Wagon

Bridgeville, Del.—Determined to have a town sprinkler to lay the dust on the streets, the Tuesday Night Club, an organization of women, raised enough money to purchase the sprinkler by giving a Japanese tea and lawn fete.

### Oiling of Streets Commences in Altoona

Altoona, Pa.—The work of oiling several unpaved highways in the city for the purpose of allaying the dust has been started by the department of highways. Thirty barrels of oil ordered for the purpose has arrived in the city, and a machine rigged up by Superintendent Fields will be used in applying the oil. The experiment of oiling the streets was tried last summer in the city with very excellent results, and it will be done again this year. The success of the scheme depends much upon the condition of the oil; at some places it will allay the dust for two months or more, while at others it will not last so long.

## RAPID TRANSIT

### No Advertising in Cars

Chicago, Ill.—The Council committee on judiciary at a meeting of the City Council recommended for passage an ordinance prohibiting advertising in street cars, elevated trains and railroad cars. The ordinance carries with it a provision for a fine of \$10 to \$100 for each offense, each day's act to be considered a separate offense. An opinion has already been given by the corporation counsel that such an ordinance would be legal.



### Rapid Transit by Moving Platform

New York, N. Y.—The commission have adopted a resolution laying out a route for a moving platform subway under 34th street, Manhattan, from the westerly side of Third avenue to a point between Eighth and Ninth avenues. The laying out of this route was not acted upon as a part of the so-called dual system of rapid transit extension, but came as a result of the proposals of the Continuous Transit Securities Co., of which Max E. Schmidt is president, and in which Stuyvesant Fish and others have been actively interested. The route as laid out calls for two loops in addition to the line under 34th street. The first loop will begin at 34th street and Third avenue, and extends under 34th street, Second avenue, 35th street and Third avenue to the point of beginning. The second loop will extend from a point in 34th street between Eighth and Ninth avenues, under 34th street, Ninth avenue and private property to the point of beginning. The provisions as to the general mode of operation are that the route may be operated either by moving platforms or by separate cars or trains, or by any other device or means in the construction of which stationary means for guiding a conveyance in a definite path and means for propelling such conveyance are necessary elements. The provision was thus made broad enough so that if it was deemed advisable to abandon the moving platform method of operation, the route could be operated by separate cars or trains.

### P. A. Y. E. Cars for Racine

Racine, Wis.—The first of the six new street cars that are to supplant the present "cigar box" type have arrived in the city. Assistant General Manager Stearns and his force brought the car from Milwaukee and after the city council had adjourned the aldermen and the newspaper reporters were given a "joy ride" around the city in the car. The new car is of the "pay-as-you-enter" type, and it is one of the latest types in street car construction, an all steel affair. The seating arrangement is similar to that of the big M. R. K. cars, and it will seat only thirty-two passengers, but there is ample room for "straphangers" in the aisle. No one will be allowed on the platforms and all smoking will consequently be cut off. Both the front and rear platforms are entirely enclosed, being equipped with an automatic arrangement which will throw open the glass paneled doors. Passengers are supposed to get on the rear platform when boarding the car and get off at the front end. The conductor stands on a little raised platform at the rear of the car and as a passenger enters he is forced to deposit his nickel in a box arranged for the purpose. The duty of the conductor is to give out transfers, make change, and work the automatic device which controls the opening and shutting of the doors. When any of the doors are opened a red light flashes in front of the motorman, and when the doors are closed a white light burns. By this system the motorman will always know when to start his car. The new car is a fine appearing one. It has an electrical heating device.

### New Augustine Anxious for Trolley Line

St. Augustine, Fla.—The property owners of New Augustine are determined to have direct transportation facilities to connect with St. Augustine and with this end in view a petition has been drawn up and signed by nearly every property owner in New Augustine urging the county commissioners to grant a right of way along King street to the St. Johns Electric Co., or to such company as will construct and operate a carline along said street in New Augustine. This petition will be presented to the board of county commissioners and will be read and acted upon at the regular July meeting of the board. This will be the means of bringing the question of extending the trolley line into New Augustine in open discussion again. It will be remembered that this matter was brought before the commissioners several months ago, but the authorities have withheld the permit for a right-of-way until King street in New Augustine was widened, as they claim the street is now too narrow to permit of the street car service as it would be dangerous to general traffic. An effort was then made to get the property owners along King street to deed sufficient land to widen the street ten feet on either side. Most of the property owners agreed to this, but the scheme was blocked by one or two who would not consent to give the small strip of land necessary for the purpose.

## MISCELLANEOUS

### Adopt Cleaning Plans for Public Market

Tacoma, Wash.—A thorough overhauling will be given the public market as the result of orders issued by Mayor W. W. Seymour after a conference he had with the pure food committee of the Presidents' Council of Women's Clubs. The stalls will be washed out regularly hereafter and the street and sidewalk frequently sprinkled during the day. Commissioner Lawson will be asked to provide more faucets so that better accommodations for cleanliness can be had. Alex. Shortes, who is acting as pure food inspector during the absence of Esther Allstrum, the regular inspector, will also be asked to see that peddlers carry the required numbers on their wagons and that they follow the regulations laid down in the pure food ordinance by keeping their produce covered.

### Cement Block Crusade

Indianapolis, Ind.—A crusade against cement block manufacturers who do not comply with the city ordinance regulating the manufacture and use of cement blocks has been started by T. A. Winterrowd, city building inspector. In several instances inspectors of the building department have found blocks on which the name of the manufacturer and date of manufacture had not been stamped. In one case Mr. Winterrowd condemned a large number of blocks which were about to be used and which did not comply with the ordinance. Winterrowd says not only will blocks made in violation of the ordinance be condemned, but the manufacturer will be arrested as well.

### Valuable Library Adjunct

Chicago, Ill.—Chicago's public library has established a department intended to be of especial assistance to the various municipal departments in serving the public. The newly equipped service is in what has been designated as the "civics room." Here is collected and systematically arranged data which can be of particular value to city officials, commissions, boards, committees, etc., charged with research in definite lines, as well as students and citizens interested in civic problems. Every conceivable subject, from slaughter houses to municipal art, is comprehended in the plan.

### Sane Fourth in Wilmington

Wilmington, Del.—To insure a safe and sane Fourth of July the police took definite action toward the restriction of the sale of big and dangerous fireworks of all kinds. Chief of Police George Black instructed all patrolmen to warn the dealers that they must not sell dangerous explosives to children and that the law regulating the size of firecrackers would be rigidly enforced. The patrolmen were told to keep a close watch on all stores where fireworks were sold and to arrest and prosecute any dealer found violating the ordinances or the police orders. No dynamite "crackers" were permitted and no firecrackers more than four inches in length or one-half inch in thickness sold.

### City to Raise Guinea Pigs for Medical Tests

St. Louis, Mo.—The first step in the direction of municipal ownership will be taken by St. Louis in a few days when it will establish a guinea pig and rabbit farm on the grounds of the City Infirmary. Under the present plans the entire output of the farm will be utilized by the city, and there is hardly a possibility of it entering the market with its wares. The medical institutions of the city use many animals in experiments, and it is believed the cost of raising them is less than the cost of purchasing. Dr. Cleveland H. Shutt, hospital commissioner, will give the plan a trial.

### Farm for "Down and Outs."

Chicago, Ill.—Plans for the purchase of a large truck farm by the city for the employment and care of "down and outs" have been submitted to the City Council by the City's Commission on the Unemployed. Dr. Charles Henderson, president of the University of Chicago, and chairman of the commission, endorses the plan. The farm, to be established in the Desplaines Valley, just outside the city, will have cottages and barracks and the working hours are not to be long or the work arduous. Small remuneration, based on efficiency, is suggested. It is believed that the open air life will revive ambition in the younger men and give the elders an opportunity to earn a good living and have a home.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Sewer Improvements—Injunction—Presumption

*Dunker v. City of Des Moines et al.*—The fact that a city provides no outlet for a sewer does not make the contract for its construction invalid, since it will be presumed that the city will at a proper time provide such an outlet as will make it serviceable.—Supreme Court of Iowa, 136 N. W. R., 536.

#### Streets—Alterations—Proceedings

*City Improvement Co. v. City of Pittsburgh.*—A city has no power by locating and relocating ordinances to locate what purports to be a new street 60 feet wide, which in fact merely widens an existing street 40 feet wide and an alley connecting therewith 20 feet wide, but must, if it thinks proper to widen the street and alley, do so in the manner prescribed by the statutes relating to the widening of streets.—Supreme Court of Pennsylvania, 83 A. R., 408.

#### Minimum Wage—Ordinance—Validity

*Malette v. City of Spokane.*—The Legislature may fix the hours of labor on all public work in cities. A city in improving a street or other public improvement at the cost of the property benefited acts in its proprietary capacity as agent of the property owners, and it must promote the interests of the owners, and may not place a burden on them in violation of the rule of law requiring an agent to serve the interest of his principal. A municipality existing under the statute cannot exercise power beyond its delegated power, and a city operating under a freeholder's charter cannot in the exercise of its police power or in the performance of strictly municipal functions go beyond the policy as declared by the State Legislature, and in matters involving a public policy having no definite relation to the police power or governmental functions of a municipality a city is powerless to act. An ordinance of a city fixing a minimum wage for labor on local improvements done by the city at the cost of property benefited is unreasonable and invalid, where the amount fixed is from 50 to 90 cents higher for an eight-hour day than the wages paid in private employment for like labor for a ten-hour day.—Supreme Court of Washington, 123 P. R., 1005.

#### Sidewalk Assessments—Validity

*Peabody et al. v. City of Edmonds et al.*—Where the itemized estimate of the cost of a street improvement, including sidewalks and crosswalks and overhaul and engineering, totaled \$9,209.75, and the contract for the work did not include crosswalks and sidewalks, itemized at \$3,184, an assessment for the improvement of \$6,025.74 would be sustained, providing the total cost, including the items of overhaul and engineering, amounted to that much.—Supreme Court of Washington, 123 P. R., 1018.

#### City Engineer—Right to Assistant

*Towle v. City of Mobile.*—A city engineer is not entitled to reimbursement for payments for services of a rodman rendered after the city notified the engineer that such assistance would not be paid for by the city. A public officer must perform the duties of his office for the stipulated salary without right to reimbursement for assistance not provided by law.—Court of Appeals of Alabama, 58 S. E. R., 668.

#### Street Improvement Bonds—Nature—Authority

*City of Charlotte v. American Trust Co.*—Priv. Laws 1911, amending Charlotte City Charter by giving the city power to tax the cost of street improvements against abutting property owners, and to issue street improvement bonds to be sold at not less than par, adds to the powers of the city to pave its streets at the cost of its general fund by authorizing the issuance of street improvement bonds, possessing the character of municipal bonds; and the provision in the act that the bonds shall contain recitals showing that they are chargeable to particular property does not affect the character of the bonds, but merely makes the property benefited specially liable to their payment—the word "bonds," when used in connection with municipal obligations, implying an obligation of a city, as obligor, bound to do what it has agreed shall be done.—Supreme Court of North Carolina, 74 S. E. R., 1054.

#### Bonds—Defenses Arising After Commencement

*Borner v. City of Prescott et al.*—In a taxpayer's action to enjoin the sale of municipal bonds where the only objection casting doubt on the validity of their issuance is that the bid accepted does not conform to the ordinance authorizing their issuance, and where, before the filing of its answer, the city abandons the idea of selling them except in conformity with the ordinance, the complaint should be dismissed without passing on the question of whether the city could sell the bonds according to the terms of the bid.—Supreme Court of Wisconsin.

#### Officers—Appointment—Fire Department

*People ex rel. Wallace, Chief Dobbs Ferry Fire Department v. Carpenter.*—Village Law provides that in villages where there is a board of fire commissioners such board shall appoint the chief engineer and assistant engineers of the fire department. Section 89, subd. 19, gives the board of trustees all the powers and requires it to perform all the duties of a separate board of fire, water, or sewer commissioners if the village has no such separate board, and in such case a provision applying to either of such boards applies to the board of trustees. Section 206 provides that any village in which separate fire commissioners are not appointed the chief engineer, the assistant engineers, and wardens of the companies shall constitute the council of the fire department, which shall have all the powers of the board of fire commissioners as prescribed by Section 200 of that chapter; but Section 200 does not provide for the appointment or election of a chief engineer and assistants, or any other officer of the fire department. Held, that the trustees of a village having no board of fire commissioners, and not the council of the fire department, had power to select the chief engineer.—New York Supreme Court, 135 N. Y. S., 595.

#### Ordinances—Involuntary Servitude

*City of Chicago v. Williams.*—An ordinance authorizing the municipal court to compel one fined thereunder for violating an ordinance against gaming to work out his fine would not violate Const. U. S. Amend. 13, abolishing involuntary servitude except for crimes, since the constitutional provision does not apply to the enforcement of a police regulation.—Supreme Court of Illinois, 98 N. E. R., 666.

#### Defective Streets—Statutory Provisions—Railways

*Thompson v. City of Boston.*—Under Rev. Laws, making a city liable for injuries to a traveler in the exercise of due care from the want of a sufficient railing in or upon a public way which it is bound to maintain if the defect might have been remedied by reasonable diligence, the danger must be of an unusual character, such as declivities, excavations, steep banks, or deep water.—Supreme Judicial Court of Massachusetts, 98 N. E. R., 700.

#### Street Obstructions—Right to Relief

*Lowe et al. v. City of Lawrenceburg et al.*—A complaint alleging that the closing of a street on which plaintiff's property did not abut would cut off his most convenient route to N. street and the river did not show any special injury to his property entitling him to enjoin the closing of the street, where it appeared that the most direct route from his property to N. street and the river was by the street on which the property abutted, and not by the street about to be closed.—Supreme Court of Indiana, 98 N. E. R., 637.

#### Defective Streets—Injuries to Pedestrians

*Blair v. City of Ft. Wayne.*—Burns' Ann. St. 1908, provides that no action for injury from any defect in streets shall be maintained against any city, unless written notice thereof shall have been given to the mayor or clerk of the city within 60 days. Within the time specified, plaintiff commenced an action against a city by filing her complaint with the clerk of the circuit court, and causing a summons to be served on the city controller. Held, that a compliance with such section was a limitation on plaintiff's right to a remedy against the city; and the summons and complaint, not having been served on the clerk or mayor, was insufficient to constitute notice, as required by the statute, so as to sustain a subsequent action, founded on a new complaint, filed after the expiration of the time.—Appellate Court of Indiana, 98 N. E. R., 736.



In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

## ROADS AND PAVEMENTS

**Good Roads** in Colorado. By F. L. Barclay. Illustrated, 21-2 pp., Better Roads, July. 10 cts.

Through Some of the Roads of Florida. By W. H. Beers. Illustrated, 31-2 pp., Automobile and Good Roads Advocate, July. 15 cts.

New Kind of Road in Connecticut. Communication from J. S. Robeson. 1-2 p., Municipal Journal, June 27. 10 cts.

John Loudon McAdam, the Road Builder. By M. O. Eldridge. 4 pp., Good Roads, June 1. 10 cts.

Park Roadway Work in the Borough of Manhattan, New York City. Illustrated, 3 pp., Good Roads, June 1. 10 cts.

New Jersey Roads. By Col. E. A. Stevens. 5 pp., Better Roads, July. 10 cts.

Treated Roads in the Central District, Stirlingshire. By D. R. Cox. 2 pp., Surveyor, June 21. 40 cts. 1 p., Contract Journal, June 19. 25 cts.

Staffordshire Roads. Extract from report of County Surveyor James Montur. 1 p., Surveyor, June 14. 40 cts.

New York State Roads. 2 pp., Better Roads, July. 10 cts.

The Ohio Road Situation. 12 pp., Better Roads, July. 10 cts.

Highway Work in Los Angeles County. Illustrated, 5 pp., Good Roads, June 1. 10 cts.

Public Roads of New Jersey. By E. A. James. Illustrated, 2 pp., Canadian Engineer, June 20. 15 cts.

**Construction**, Handling Rock Work on Road. By D. J. Hauer. 2 pp., Contract Record, June 26. 15 cts. 2 pp., Contractor, June 15. 20 cts.

Practical Road Building. By J. N. Edy. Illustrated, 4 pp., Municipal Engineering, June. 25 cts.

**Bituminous Roads** in 1911. Paper before American Association for the Advancement of Science. By A. H. Blanchard. 3 pp., Engineering News, June 6. 15 cts.

Construction of Asphalt Macadam in Webb City, Mo. By E. W. Robinson. 2 pp., Municipal Engineering, June. 25 cts.

Changes Noted in Tar Exposed to Traffic and Weathering When Used in a Road Surface. Paper before American Association for the Advancement of Science. By W. W. Crosby. 2 pp., Good Roads, June 1. 10 cts.

Use of Bituminous Materials on Highways in 1911. By A. H. Blanchard. 41-2 pp., Municipal Engineering, June. 25 cts.

The Mud Nuisance on Oiled Macadam Roads. 2 pp., Engineering News, June 6. 15 cts.

**Asphalts**: Sources of Supply and Methods of Preparation. 2 pp., Engineering and Contracting, June 12. 10 cts.

Trinidad and Bermudez Asphalts and Their Use in Highway Construction. By Clifford Richardson. Illustrated, 17 pp., Popular Science Monthly, July. 30 cts.

**Concrete Roads**. What they cost. By W. P. Blair. 11-2 pp., Clay Worker, June. 25 cts.

An Improved Concrete Pavement. By E. W. Groves. Illustrated, 2 pp., Canadian Engineer, June 13. 15 cts.

Use of Concrete in Road Construction. Paper before American Association of Portland Cement Manufacturers. By L. W. Page. 2 pp., Contract Record, June 12. 15 cts.

Construction of Concrete Pavements. By A. M. Compton. 2 pp., Contract Record, June 5. 15 cts.

Economics of Concrete Pavements. By C. D. Smith. Illustrated, 11-2 pp., Contract Record, June 19. 15 cts.

Concrete Roads in Michigan Fall. By W. P. Blair. Illustrated, 21-2 pp., Brick, June 15. 10 cts.

Portland Cement Concrete Roads. 11-4 pp., Engineering and Contracting, June 12. 10 cts.

Concrete Roads in Wayne County, Mich. 31-2 pp., Good Roads, June 1. 10 cts.

Concrete Roads of Wayne County, Mich. By G. A. Dingman, County Engineer. 11-2

pp., Engineering and Contracting, June 19. 10 cts.

Concrete Roads. Paper before American Association of Portland Cement Manufacturers. By L. W. Page. 11-2 pp., Cement Age, June. 15 cts.

**Chemistry** of Modern Highway Engineering. Paper before American Association for the Advancement of Science. By Prevost Hubbard. 5 pp., Better Roads, July. 10 cts.

**Paving** Guarantee, Standard. 11-2 pp., City Hall-Midland Municipalities, July. 25 cts.

Comparison of Cincinnati's Pavements. 21-2 pp., Municipal Engineering, June. 25 cts.

Some Considerations in the Choice of a Pavement. Paper before Engineering Society of Wisconsin. By L. S. Smith. 21-2 pp., Municipal Engineering, June. 25 cts.

**Specifications** of the Association for Standardizing Paving Specifications, New. 41-2 pp., Good Roads, June 1. 10 cts.

**Brick Paving** Solves Big Problem. Address before Good Roads Convention at New Orleans. By R. C. Penfield. 11-2 pp., Brick, June 15. 10 cts.

Motor Trucks Boost Brick. Illustrated, 21-2 pp., Brick, June 15. 10 cts.

Paving Brick's Record. Illustrated, 3 pp., Brick, June 15. 10 cts.

How to Make Good Paving Brick. Dangers in mixing. By Ellis Lovejoy. Illustrated, 4 pp., Brick, June 15. 10 cts.

Uniform Specifications in Brick Construction. Address before Good Roads Convention, Columbus, O. By A. B. Lea. 1 p., Brick, June 15. 10 cts.

Life of Brick Pavements. 3 pp., Engineering and Contracting, June 19. 10 cts.

Strain Measurements of Brick Pavements. Paper before National Paving Brick Manufacturers' Association. By J. E. Howard. Illustrated, 11-2 pp., Engineering News, June 20. 15 cts.

**Crown** of Paved Streets. By S. Whinery. Illustrated, 11-3 pp., Engineering News, June 6. 15 cts.

**Sidewalk** Decision in Iowa, Permanent. 11-2 pp., City Hall-Midland Municipalities, July. 25 cts.

**Travel**, Problem of Street. 2-3 p., Engineering Record, June 15. 10 cts.

## SEWERAGE AND SANITATION

**Sewerage** of Thornton-le-Fylde, Bisham-with-Norbeck, and Carleton, Joint Scheme of. Paper before Royal Sanitary Institute. By Arthur Hindle. 2 pp., Surveyor, May 31. 40 cts.

**Sewer**, Combined Flood-Wall and Intercepting. Illustrated, 2 pp., Engineering Record, June 22. 10 cts.

**Pipe** Developments, Concrete. Illustrated. 21-2 pp., Brick, June 1. 10 cts.

**Flushing**, Methods and Results of Sewer. Illustrated, 2 pp., Municipal Engineering, June. 25 cts.

**Kutter** Formula Diagram, A New. By K. R. Kennison. Illustrated, 1 p., Engineering News, June 20. 15 cts.

**Pumping** System on Small Sewer Work, Point. Illustrated, 2 pp., Contractor, June 1. 20 cts.

**Disposal** of Toronto's Sewage. 1 p., Canadian Engineer, June 20. 15 cts.

Use and Abuse of Sewage Disposal Plants. By C. A. Smith. 3 pp., City Hall-Midland Municipalities, July. 25 cts.

Sewage Disposal at Moose Jaw. 1-2 p., Contract Record, June 19. 15 cts.

Heywood Sewage Purification and Refuse Destructor Works. Paper before Institution of Municipal Engineers. By R. J. McKenn. 11-2 pp., Canadian Engineer, June 6. 15 cts.

Reduction in Putrescibility of Sewage by Settling and by Filtration. Paper before American Public Health Association. By Dr. Arthur Lederer. 31-2 pp., Municipal Engineering, June. 25 cts.

Sewage Disposal Works at Pelham. Il-

lustrated, 11-3 pp., Engineering Record, June 22. 10 cts.

Struggle with Sewage Sludge. By Wm. Naylor. Illustrated, 31-2 pp., Surveyor, June 7. 40 cts.

Digestion of Sewage Sludge. By Chas. Saville. 2 pp., Canadian Engineer, June 13. 15 cts.

**Stream Pollution** Law. Decision of the Supreme Court of Ohio on the Constitutionality of the Ohio. 11-2 pp., Engineering and Contracting, June 5. 10 cts.

**Sanitation** of Iquitos. 4 pp., Bulletin of the Society of Engineers of Ecuador, May. 50 cts.

Sanitary Survey of the Ottawa River. From report of Board of Health of Quebec. 4 pp., Canadian Engineer, June 13. 15 cts.

**Mosquito** Eradication, Notes on. By G. W. McCoy. 6 pp., Public Health Reports, June 28.

Screening as an Anti-Malaria Measure. By A. J. Orenstein. 11-3 pp., Engineering Record, June 29. 10 cts.

**House Fly**, The Role of the, and Certain Other Insects in the Spread of Human Diseases. By Dr. W. E. Britton. Illustrated, 14 pp., Popular Science Monthly, July. 30 cts.

How to Conduct an Anti-Fly Campaign. 1 p., Bulletin Texas State Board of Health, April.

**Propagation** of Disease. The Role of Carrier-Cases in the. By E. J. McWeeney. 13 pp., Journal of State Medicine, June. 60 cts.

**Hygiene** Exhibit for Use in Schools. By J. P. Simonds. 11-2 pp., Bulletin Indiana State Board of Health, April.

**Infant** Mortality and Infant Vitality. Articles by W. F. Wilcox, F. D. Beagle, H. L. K. Shaw, Theo. Horton, C. G. Kerley, V. A. Moore and H. L. Wheeler. 19 pp., Bulletin New York State Department of Health, May.

**Babies** and Its Prevention. By J. McI. Phillips. 10 pp., Bulletin Ohio State Board of Health, May.

**Tuberculosis**, Ohio Society for the Prevention of. 2 pp., Bulletin Ohio State Board of Health, May.

**Milk** Supplies, Efficient Dairy Inspection for City. By Dr. C. W. Eddy. 2 pp., Bulletin Ohio State Board of Health, May.

Methods and Standards for the Production and Distribution of Certified Milk. 15 pp., Public Health Reports, June 14.

**Benzoate** of Soda Decision, The. Text of the report of the Master in Chancery. 31-2 pp., Indiana State Board of Health, April.

**Municipal Ordinances**, Rules and Regulations Pertaining to Public Hygiene. 4 pp., Public Health Reports, May 31; 6 pp., June 14; 5 pp., June 21; 8 pp., June 28.

## WATER SUPPLY

**Water Supply**, Los Angeles' New. Sources of supply for aqueduct; Owens River fed by streams and springs, supply uniform and pure, supplemented by artesian wells; quality of the supplies. By Burt A. Heinly. Illustrated, 21-2 pp., Municipal Journal, June 27. 10 cts.

The Hinckley Water Works. Paper before Institution of Water Engineers. By E. H. Crump. 3 pp., Surveyor, June 21. 40 cts.

Water Supply of Paris. 2 pp., Surveyor, June 14. 40 cts.

Gloucester Water Works. Paper before Institution of Water Engineers. By R. Read. 21-2 pp., Surveyor, June 14. 40 cts.

Municipal Water Works at Corning, Cal. By C. F. Braun. Illustrated, 1 p., Engineering Record, June 29. 10 cts.

Ancient and Modern Water Works. From paper before American Water Works Association. By Edw. Wegmann. 11-2 pp., Contract Record, June 26. 15 cts.

Water and Sewage Systems. Paper before Union of Alberta Municipalities. By G. H. Altham. 11-4 pp., Canadian Engineer, June 20. 15 cts.

Chettenham Water Works. Paper before Institution of Water Engineers. By J. S. Pickering. Illustrated, 3 1-2 pp., Surveyor, June 7. 40 cts.

**Reservoirs.** Modern. Presidential address before Institution of Water Engineers. By J. S. Pickering. 4 1-2 pp., Surveyor, June 7. 40 cts.

Computing the Size of a Reservoir Spillway. Communication from C. C. Jacob. 2-3 p., Engineering News, June 13. 15 cts.

On the Impounding of Waters to Prevent Floods. By A. H. Perdue. 11-2 pp., Canadian Engineer, June 13. 15 cts.

Waterproofing a Reservoir Division Wall by Use of the Cement Gun. By J. B. Landfield. Illustrated, 1 p., Engineering Record, June 29. 10 cts.

**Dam** Construction. Timiskaming. Illustrated, 6 pp., Canadian Engineer, June 20. 15 cts.

Failure of the Lincoln Pond Dam near Westport, N. Y. Illustrated, 2-3 p., Engineering News, June 6. 15 cts.

**Tanks.** Increasing Depth of Wooden. By A. H. Meyers. 1-3 p., Municipal Journal, June 20. 10 cts.

Design of Water Tower and Tank of 100,000 Gallons Capacity. Illustrated, 2 pp., Engineering and Contracting, June 19. 10 cts.

**Aqueduct** Tunnels. Methods of Alignment in Three. By J. L. Davis, A. W. Tidd and E. A. May. Illustrated, 3 1-2 pp., Engineering News, June 20. 15 cts.

Concrete Flume and Culverts, Los Angeles Aqueduct. Illustrated, 1 p., Engineering Record, June 22. 10 cts.

Rules for Determining Bonus Payment on the Los Angeles Aqueduct. 1 p., Engineering and Contracting, June 12. 10 cts.

Lining Part of the Bonticou Grade Tunnel. Methods followed on a 17 by 13 rock tunnel on the Catskill Aqueduct. By J. H. C. Gregg. Illustrated, 3 pp., Engineering Record, June 22. 10 cts.

Inverted Siphons on the Los Angeles Aqueduct. Illustrated, 3-4 p., Engineering Record, June 29. 10 cts.

**Pipes** or Hollow Cylinders of Any Substance. Table for Obtaining Weights of. By F. Tissington. 1 p., Canadian Engineer, June 20. 15 cts.

Laying Submerged Water Main. Paper before American Water Works Association. By M. L. Worrell. 2 1-2 pp., Engineering and Contracting, June 19. 10 cts.

Laying a Water Works Intake in 65 Feet of Water at Marquette, Mich. Illustrated, 1 p., Engineering Record, June 29. 10 cts.

**Pumping** by Compressed Air. By H. A. Abrams. Reprint from School of Mines Quarterly. 5 1-2 pp., Canadian Engineer, June 13. 15 cts.

Variable Speed Drive for Centrifugal Pumps. By C. A. Carpenter. Illustrated, 1 p., Engineering Record, June 8. 10 cts.

**Fire Hydrants.** Unobstructive. 1-3 p., Municipal Journal, June 13. 10 cts.

**Consumption.** Floor Area as a Basis for Estimating Water. Paper before American Water Works Association. By W. W. Brush. 1 p., Engineering News, June 13. 15 cts.

**Metering** the Louisville, Ky., Water Supply. 4 pp., Municipal Engineering, June. 25 cts.

**Leaks** and Consumption Records. Illustrations of water consumption from American and English records; separately recording domestic and trade consumption. Paper before American Water Works Association. By E. S. Cole. Illustrated, 2 1-4 pp., Municipal Journal, June 27. 10 cts.

Making a Water Leakage Survey at Lancaster, Pa. Paper before American Water Works Association. By F. H. Shaw. 11-2 pp., Engineering and Contracting, June 19. 10 cts.

Making a Leakage Survey. Water meters, fire hose and wrought iron pipe used. No special apparatus or street excavation. Costs and results. By F. H. Shaw. Illustrated, 11-2 pp., Municipal Journal, June 20. 10 cts.

**Electrolysis** Investigation and Ordinance at Chicago. Illustrated, 2 pp., Engineering News, June 6. 15 cts.

Peoria Electrolysis Decree. 1-2 p., Municipal Journal, June 20. 10 cts.

**Pipe Scraping** Experiment, Successful. 1 p., Water, June 15. 25 cts.

**Water Hammer.** The Danger of. Illustrated, 2 pp., Water, June 15. 25 cts.

**Check Valves.** Special, on City and Factory Water Supply Interconnections, Auburn, N. Y. By J. W. Ackerman. Illustrated, 11-2 pp., Engineering News, June 13. 15 cts.

Contamination of the Water Supply at

Memphis, Tenn., by the April Mississippi Floods. By P. D. Fuqua. Illustrated, 3 pp., Engineering News, June 13. 15 cts.

Importance of Water Supply Inspection as Illustrated by Enteritis and Typhoid Outbreaks at Rockford, Ill. By E. O. Jordan. 11-3 pp., Engineering News, June 13. 15 cts.

**Purification** Plant at South Milwaukee. Illustrated, 1 p., Engineering Record, June 22. 10 cts.

Modern Developments in Water Purification. By E. A. Andrews. Illustrated, 5 1-2 pp., Water, June 15. 25 cts.

Water Purification at Minneapolis. By J. A. Jensen. Illustrated, 7 pp., Engineering News, June 27. 15 cts.

Novelties in Water and Sewage Treatment. 1-4 p., Municipal Journal, June 27. 10 cts.

Design of Concrete Settling Basin for Muskogee, Okla., Water Works. 2 1-2 pp., Engineering and Contracting, June 12. 10 cts.

Filtration Results at Albany. 11-3 pp., Engineering Record, June 22. 10 cts.

Rapid Filtration of the Croton Supply, N. Y. Illustrated, 1-2 p., Engineering Record, June 29. 10 cts.

The Air System of the Queen Lane Preliminary Filters. By C. B. Buerger. Illustrated, 11-2 pp., Engineering Record, June 22. 10 cts.

Water Filtration for Industrial Purposes. By C. Hungerford. 5 pp., Chemical Engineer, June. 25 cts.

Hypochlorite Sterilization at Kansas City. Paper before American Water Works Association. By S. Y. High. Illustrated, 2 1-2 pp., Municipal Journal, June 20. 10 cts.

Emergency Hypochlorite Plant. Illustrated, 1-2 p., Municipal Journal, June 20. 10 cts.

The Selective Action of Bleach. By B. G. Philbrick. 1-2 p., Engineering Record, June 29. 10 cts.

Ozone Treatment at St. Petersburg. Largest ozone water purification plant in the world; general description; bacterial efficiency. By F. P. Mann. Illustrated, 1 p., Municipal Journal, June 20. 10 cts.

Ultra-Violet Ray Sterilization. Illustrated, 1-2 p., Municipal Journal, June 27. 10 cts.

Notes on Water Softening. From paper before Institution of Municipal Engineers. By Dr. J. F. Meyer. 2 pp., Water, June 15. 25 cts. 11-2 pp., Surveyor, May 31. 40 cts.

The Excess Lime Method of Disinfecting and Softening Water. From report by A. C. Houston, Metropolitan Water Board, London. 11-2 pp., Engineering News, June 6. 15 cts.

**Ice Trouble** at Buffalo. Anchor ice on intake; slush ice clogs pumps; methods of handling these, plans for prevention. Paper before American Water Works Convention. By H. L. Lyon. 2-3 p., Municipal Journal, June 20. 10 cts.

**Purchasing** Supplies. The Philosophy of. Paper before American Water Works Association. By E. C. Church. 2-3 p., Engineering News, June 13. 15 cts. 1 p., Contract Record, June 26. 15 cts.

**Efficiency.** Principles of. Six altruistic and six practical principles, definitions of each and application to municipal work. From paper before American Water Works Association. By Harrington Emerson. 1 p., Municipal Journal, June 27. 10 cts.

**Forms.** Standard Water Works. Why they are not more generally used, what they should aim at; simplicity and publicity necessary for their adoption. 11-2 pp., Municipal Journal, June 20. 10 cts.

Water Works Records and Reports. 1-3 p., Municipal Journal, June 20. 10 cts.

**Valuation** of Water Works. Cost of reproduction, value of plant site, distribution system, adequateness of plant, depreciation, going value. By Alton D. Adams. 2 1-2 pp., Municipal Journal, June 20. 10 cts.

**Association.** American Water Works. 1-2 p., Municipal Journal, June 13. 10 cts.

Convention of the American Water Works Association. Business proceedings, reports of committees, abstracts of papers read and of discussions. 5 pp., Municipal Journal, June 13; 2 1-2 pp., June 20. 10 cts. 17 pp., Engineering Record, June 15. 10 cts. 4 pp., Engineering News, June 13. 15 cts.

**Statistics** of American Cities. Water Works. Latest data from several hundred water works superintendents, giving source and method of supply, method of treatment, population supplied, consumption, percentage metered, and cost of supplying water. 8 pp., Municipal Journal, June 20. 10 cts.

## STREET LIGHTING & POWER PLANTS

**Lighting** of Seattle, The. By W. J. Grambs. Illustrated, 41-2 pp., Good Lighting, May. 20 cts.

Investigation of Municipal Lighting for Rockland, Mass. 3 pp., Municipal Engineering, June. 25 cts.

**Gas** as an Illuminant. From paper before Franklin Institute by Van Kense-laeer Lansingh. 2 1-2 pp., American Gas Light Journal, July. 10 cts.

Use of Gas for Heat and Power. Testing of Gas. Paper before Franklin Institute by E. B. Rosa. Illustrated, 6 pp., American Gas Light Journal, June 24. 10 cts.

Flow of Gas Formulae. Paper before Illinois Gas Association by J. M. Spitzglass. 8 1-2 pp., Progressive Age, June 1. 20 cts.

Liquid Purification of Illuminating Gas. By C. R. Schnerr. Paper before Illinois Gas Association. 5 1-2 pp., Progressive Age, June 1. 20 cts.

Two Pounds Pressure at the Tip: Why Not? Paper before Illinois Gas Association by W. I. Battin. 3 pp., American Gas Light Journal, July. 10 cts. 2 pp., Progressive Age, June 1. 20 cts.

**Standards** of Gas. Report of Committee on, to the Illinois Gas Association. 3 pp., Progressive Age, June 1. 20 cts.

Standards of Service for Gas Company. Report of committee to Illinois Gas Association. 3 pp., American Gas Light Journal, June 24.

**Notes.** Sliding Scale Gas. Some conclusions drawn from experiences in Great Britain and in Boston. 3 pp., Public Service Regulation, June. 25 cts.

**Regulations** for Gas Companies. Proposed. By C. H. Stone. 2 pp., Progressive Age, June 15. 20 cts.

**Electric** Light Association, National. Report of convention. 4 pp., Electrical Review, June 15; 24 pp., June 22. 10 cts. 10 pp., Engineering News, June 27. 15 cts.

**Power** Development on East Canada Creek. Illustrated, 2 pp., Engineering Record, June 8. 10 cts.

Influence of Ice on Water Power Development. Paper before Canadian Electrical Association. By H. T. Barnes. 2 pp., Canadian Engineer, June 27. 15 cts.

Grand Rapids Municipal Power and Pumping Plants. Enlarging pumping and boiler plants and constructing new building around them without interrupting operation, details of these plants and of the new electric power plant. By S. A. Freshney. Illustrated, 4 pp., Municipal Journal, June 20. 10 cts.

**Steam** Plants, Limiting Efficiencies of. By R. C. H. Heck. 2 pp., Power, July 2. 5 cts.

Combustion and Flue Gas Analysis. By C. M. Rogers. 2 pp., Power, July 2. 5 cts.

New Analysis of the Cylinder Performance of Reciprocating Engines. Bulletin of the University of Illinois No. 58. By J. P. Clayton. Illustrated, 104 pp. 60 cts.

Heating Surface, Boiler Horsepower. By F. L. Johnson. 2 pp., Power, July 2. 5 cts.

## FIRE AND POLICE

**Fire Prevention** from a Matron's Viewpoint. By Mrs. T. P. Tucker. 3 pp., American City, June. 15 cts.

The Principles of Lightning and of Lightning Rods. By W. H. Day. 10 pp., Insurance Engineering, June. 25 cts.

**Hazard** at Troy, N. Y., Fire. Report No. 200, National Board of Fire Underwriters, June.

Fire Hazard at Oak Hill Park, Ill. Report No. 201, National Board of Fire Underwriters, June.

**Fires** in Houston, Tex., Two Large. Illustrated. 8 pp., Insurance Engineering, June. 25 cts.

**Department.** Organization of Albany Fire. Illustrated, 11-2 pp., Fireman's Herald, June 15. 5 cts.

Many Cities Taking Up Plan of Inspection by Members of Their Fire Departments. 11-4 pp., Fire Protection, June. 20 cts.

**Marshals.** Canadian Interest in Fire. By R. T. Kelley. 11-2 pp., Insurance Engineering, June. 25 cts.

**Fire:** Its Causes and Origin. Duties of companies at fires explained, best methods of approach, how to lay hose. 11-2 pp., Fire Protection, June. 20 cts.

**High Pressure** System, Baltimore. Illustrated, 1-2 p., Municipal Journal, June 13. 10 cts.

Detecting Obstructions in Fire Service Mains. By F. C. Moore. 1 p., Engineering Record, June 8. 10 cts.



**Hydrant** of German Design, Wall Fire. Illustrated, 1-4 p., Municipal Journal, June 13. 10 cts.

**Danger to Fire Hydrants from Autos.** Illustrated, 1-4 p., Municipal Journal, June 13. 10 cts.

**Hose Couplings and Hydrant Fittings.** Standard. Paper before American Water Works Association by F. M. Griswold. 1 p., Canadian Engineer, June 27. 15 cts.

**Police Telephone.** German. Illustrated, 1-2 p., Municipal Journal, June 27. 10 cts.

## STREET CLEANING AND REFUSE DISPOSAL

**Street Sweepings** and Washings, Receptacles for. By Dr. Robt. Grimshaw. Illustrated, 1-2 pp., Municipal Engineering, June. 25 cts.

**Sprinkling** in St. Paul, Minn., Street. Paper before American Society of Civil Engineers. Illustrated, 3 pp., Canadian Engineer, June 6. 15 cts.

**Street Sprinkling** at St. Paul. Illustrated, 3 1-2 pp., Engineering and Contracting, June 6. 10 cts.

**Refuse Plants.** Municipal Ownership of. 1-4 p., Municipal Journal, June 27. 10 cts.

**Refuse Destructor** at Havana. Illustrated, 1 p., Engineering Record, June 8. 10 cts.

**A 60-Ton Refuse Destructor** at Montgomery, Ala. By John Primrose. Illustrated, 1-2-3 pp., Engineering News, June 20. 15 cts.

**A Women's League** that Keeps the Streets Clean. By Mrs. C. J. Baxter. Illustrated, 2-1-2 pp., American City, June. 15 cts.

**A Tin Can Contest.** 1-4 p., Municipal Journal, June 27. 10 cts.

## STRUCTURES and MATERIAL

**Cement.** A New Soundness Test for. 2-3 p., Engineering News, June 13. 15 cts.

**Government Adopts New Cement Specifications.** 2-1-2 pp., Cement Era, June. 10 cts. 7 pp., Cement Age, June. 15 cts.

**Autoclave Boiling Test** for Cement. By H. J. Force. Illustrated, 5 pp., Engineering News, June 13. 15 cts.

**Destruction of Cement Mortars** and Concrete Through Expansion and Contraction. From paper before American Society for Testing Materials by A. H. White. 3 1-2 pp., Canadian Engineer, June 27. 15 cts.

**Concrete Surfaces.** Protection of. Conditions which govern the application of various methods and materials. By Robt. Cathcart. 2-1-2 pp., Contract Record, June 5. 15 cts.

**Concerning the Difference in Concrete.** Editorial, 2-3 p., Engineering News, June 27. 15 cts.

**Proposed British Standard Tests** for Concrete and Reinforced Concrete. 11-4 pp., Contract Record, June 5. 15 cts.

**Concrete Piles and Piling Equipment.** From Paper before American Society of Engineering Contractors. By M. M. Upson. 6 pp., Contract Record, June 19. 15 cts.

**Consistency and Time in Mixing Concrete.** By H. F. Porter. 2-1-2 pp., Cement Age, June. 15 cts.

**Concrete Column Economics.** By J. Norman Jensen. Illustrated, 3 1-2 pp., Engineering News, June 6. 15 cts.

**Iron Corrosion Investigations.** Paper before American Electro-Chemical Society. By O. P. Watts. 2 pp., Chemical Engineer, June. 25 cts.

**Cresosote and Creosoting Oils.** Nomenclature of. Paper before American Wood Preservers' Association. By David Allerton. 11-2 pp., Municipal Engineering, June. 25 cts.

**Bridge Building** at Sedgemoor. Paper before Association of Somerset Surveyors. Illustrated, 2 1-2 pp., Surveyor, June 14. 40 cts.

**Economic Panel Lengths** for Long-Span Highway Bridges. By H. G. Tyrrell. 1-2 p., Engineering News, June 13. 15 cts.

**Highway Bridges.** Paper before American Road Congress. By A. N. Johnson. 5 pp., Better Roads, July. 10 cts.

**Water Proofing** a Bridge Floor Over a Station Concourse. 1-3 p., Engineering Record, June 8. 10 cts.

**Largest Reinforced Concrete Arch Bridge** in the World. Illustrated, 2 1-2 pp., Canadian Engineer, June 27. 15 cts.

**American Impressions of the Risorgimento Bridge** at Rome. By H. G. Tyrrell. Illustrated, 4 pp., Canadian Engineer, June 27. 15 cts.

**Kingshighway Viaduct.** St. Louis, Mo. By Mont Schuyler. Illustrated, 7 pp., Engineering News, June 27. 15 cts.

**Street Bridges** Over the Great Northern Railway Tracks in Minneapolis. By O. B. Robbins. Illustrated, 4 pp., Engineering News, June 20. 15 cts.

**By-Laws** for Toronto, New Building. 3 pp., Canadian Engineer, June 6. 15 cts.

## MISCELLANEOUS

**City Planning.** Piecemeal Development in. 1 p., Contract Record, June 12. 15 cts.

**National Conference on City Planning.** Review of meeting. 11-3 pp., Engineering News, June 6. 15 cts.

**National City Planning Conference** and Notes on Several City Plans. 4 pp., Architectural Record, July. 25 cts.

**Significance of the Civic Center.** By J. G. Howard. 2-1-2 pp., City Hall-Midland Municipalities, July. 25 cts.

**Development of a Civic Center Idea.** 1-8 p., Municipal Journal, June 27. 10 cts.

**Rus in Erbe.** Address of Mayor J. F. Fitzgerald before National Conference on Planning. 1 p., Engineering Record, June 29. 10 cts.

**The Broader Aspects of Civic Improvement.** Individual expression subordinate to the civic expression of the city as a whole. By S. D. Adshead. Illustrated, 4 pp., Contract Record, June 26. 15 cts.

**Surveying for City Map** in Schenectady. 1-4 p., Municipal Journal, June 13. 10 cts.

**Harbor Development.** Montreal's Great. Illustrated, 2 pp., Contract Record, June 6. 15 cts.

**Improvement Details** for Seattle's Harbor. Purpose, plan and cost of several projects. By Paul Whitam, acting chief engineer. 11-4 pp., Pacific Builder and Engineer, June 8. 15 cts.

**Development of the Port of Baltimore.** Character of location; control; leasing—railways and improvements. By A. L. Power. 11-2 pp., Pacific Builder and Engineer, June 15. 15 cts.

**The Port of New York.** Duties and powers of Dock Commission; inquiry of leasing system. By A. O. Powell. 2-1-2 pp., Pacific Builder and Engineer, June 6. 15 cts.

**Building Department** at Chicago. Proposed improvement in the. 2 pp., Engineering News, June 20. 15 cts.

**Municipal Works** at East Ham. Paper before Institution of Municipal and County Engineers. By J. E. W. Birch. Illustrated, 5 pp., Surveyor, June 21. 40 cts. Illustrated, 3 pp., Contract Journal, June 19. 25 cts.

**Stirling and Its Municipal Works.** Paper before Municipal and County Engineers by A. H. Goudie. Illustrated, 6 pp., Surveyor, June 14. 40 cts. 2 pp., Contract Journal, June 12. 25 cts.

**State Control** of Highway Bridge Construction. 11-2 pp., Engineering News, June 13. 15 cts.

**Rates and Standards** for All Utilities Covered in the First New Jersey Report under the New Law. 8 pp., Public Service Regulation, June. 25 cts.

**Smoke Prevention.** Fireman's catechism. By J. G. Branch. Illustrated, 3 pp., Practical Electricity and Engineering, May. 10 cts.

**Smoke Abatement Activities.** London smoke abatement exhibition, legislation in different countries, measurements of soot fall in Indianapolis. Illustrated, 2 pp., Municipal Journal, June 13. 10 cts.

**Playgrounds** for Children at Cedar Rapids. By Mrs. B. R. Johnston. Illustrated, 2 pp., American City, June. 15 cts.

**Effective Playground Work** at Small Cost. By Mrs. C. B. Alexander. 2 pp., American City, June. 15 cts.

**Lion House** at Lincoln Park. Illustrated, 2 pp., Construction News, June 15. 10 cts.

**Play as a Moral Equivalent of War.** Reprint from American Physical Education Review. By G. E. Johnson. 13 pp., Playground, July. 25 cts.

**New Public Swimming Bath** for East Ham. Illustrated, 4 pp., Surveyor, May 31. 40 cts.

**Fourth.** The Safe and Sane. Illustrated, 7 pp., Insurance Engineering, June. 25 cts.

**The New Fourth.** Wiser, happier ways of celebrating our national independence. 3 pp., American City, June. 15 cts.

**Motion Pictures.** Should the Government Censor? By John Collier. 4 pp., Playground, July. 25 cts.

**Women's Work** for Housing Reform. By B. J. Newman. 4 pp., American City, June. 15 cts.

**Woman's Home-Making Function** Applied to the Municipality. By Mrs. T. J. Bowler. 4 pp., American City, June. 15 cts.

**Civic Betterment.** Nation-Wide Work for. 22 pp., American City, June. 15 cts.

**The More Civic Work,** the Less Need of Philanthropy. By Mrs. I. B. Oakley. Illustrated, 9 pp., American City, June. 15 cts.

**Sound Public Relations.** Thoughtful presentation of electric railway manager's experience and conclusions on this subject. 5 pp., Public Service Regulations, June. 25 cts.

**Traffic Regulations.** Cincinnati. 1-4 p., Municipal Journal, June 27. 10 cts.

**An Interurban Railway Tunnel** Through the Berkeley Hills. 1-3 p., Engineering Record, June 8. 10 cts.

**Ozone Plant** in a London Underground Railway. Illustrated, 1-2 p., Canadian Engineer, June 6. 15 cts.

**Motor Truck Transportation.** Notes on Cost of Horse and. By R. W. Hutchinson, Jr. 2 pp., Engineering and Contracting, June 19. 10 cts.

**Records of Motor Truck Transportation.** Comparison with horse-drawn vehicles for exacting service; what questions to consider in weighing a motor truck proposition. By R. W. Hutchinson, Jr. 3 1-2 pp., Iron Age, June 20. 10 cts.

**Symposium on the Automobile Motor.** By J. B. Entz, J. G. Sterling and H. B. Anderson. 23 pp., Journal of the Cleveland Engineering Society, June. 50 cts.

**Analyzing the Cost of Motor Trucking.** Illustrated, 6 pp., Commercial Vehicle, July. 20 cts.

**Street Name Plates.** London. 1-3 p., Municipal Journal, June 27. 10 cts.

**Information Bureaus.** Technical. By L. B. Krause. 1 p., Engineering Record, June 22. 10 cts.

**Laboratory.** Louisville's City. 1-4 p., Municipal Journal, June 27. 10 cts.

**Paint Technology.** Recent Developments in. Paper before American Institute of Architects. By H. A. Gardner. 5 pp., Canadian Engineer, June 6. 15 cts.

**Contractor's Outfit.** The Kitchen End of a. By H. O. Beau. Illustrated, 3 pp., Contractor, June 15. 20 cts.

**Care and Operation** of Steam Road Rollers. 2-1-2 pp., Contractor, June 1. 20 cts.

**Cost of Hydraulic Dredge Fill** for the Extension of Lincoln Park, Chicago. Illustrated, 1 p., Engineering and Contracting, June 5. 10 cts.

**An Economic Plant** for Sand and Gravel. By R. M. Hale. 4 pp., Builder and Engineer, June 29. 15 cts.

**The Executive Control of Expenditure.** A construction company's systematic method of standardizing outlay and keeping track of various expenses. By Lindon Bates, Jr. Illustrated, 4 1-2 pp., Contract Record, June 26. 15 cts.

**Bid.** Quality of Construction and the Lowest. Communication from J. J. Doyle. 3-4 p., Contract Record, June 26. 15 cts.

**How to Obtain Satisfactory Bids** from Good Contractors. By Richard Morey. 1-2 p., Contract Record, June 6. 15 cts.

**Is the General Quality of Construction Adversely Affected by the Principle of the Lowest Bid?** 1-2 p., Contract Record, June 12. 15 cts.

**Engineering Office.** Some Business Forms Used in an. By C. N. Bennett. Illustrated, 11-3 pp., Engineering News, June 20. 15 cts.

**Paris Meeting** of the Municipal and County Engineers. Illustrated, 3 pp., Surveyor, May 31. 40 cts.

**The Engineering Graduate** and the World. By Dean C. H. Benjamin, Purdue University. 12-3 pp., Engineering News, June 6. 15 cts.

**Card Index.** Titles of Drawings; Their Relation to the. By A. L. Heywood. 1 p., Engineering News, June 20. 15 cts.

**Taxes Levied** by Iowa Town Councils. By A. W. Asborne. 3 pp., City Hall-Midland Municipalities, July. 25 cts.

**How City Planning Bills** Are to Be Paid. Paper before National Conference on City Planning. By N. P. Lewis. 2-1-2 pp., Engineering Record, June 8. 10 cts. 3 1-2 pp., Engineering News, June 13. 15 cts.

**Valuation.** Principles of. By Alfred Erickson. 8 pp., Public Service Regulation, June. 25 cts.

## BOOK REVIEWS

**City Welfare.** Bulletin No. 13 of the Chicago School of Civics and Philanthropy. 75 pp., 6 x 9. Published by the school. Price, 20 cents.

Perhaps the most complete reference book published of "aids and opportunities" for the city welfare worker. Gives names, addresses and purposes of Federal, State and municipal departments, libraries, literature and organizations, exhibits, motion pictures, lectures, schools, colleges, etc. Brief descriptions and photographs of budget; civic and welfare exhibits, moving picture films for rent, etc., are given.

## NEWS OF THE SOCIETIES

### American Society of Civil Engineers

The forty-fourth annual convention of the American Society of Civil Engineers was held in Seattle, Wash., on June 25-28, being the second time in the history of the organization that the convention has been held on the west coast. On the opening day 213 members had registered and before the close 350 engineers were listed at headquarters.

The addresses of welcome to the visiting members were delivered by Geo. A. Lee, of Olympia, representing Governor M. E. Hay, of Washington; the Hon. Geo. F. Cotterill, mayor of Seattle, who is an engineer by profession, and J. W. Spangler, secretary of the Seattle Clearing House Association. The president of the society, John A. Ockerson, delivered his address following the formal opening of the convention. The most important feature of it was a discussion of the means by which the society could be brought in closer touch with local engineering problems.

A paper was read by William Mulholland on the Los Angeles Aqueduct, there was an illustrated paper on Pacific Coast harbors, presented by Brig-Gen. H. M. Chittenden, with a discussion of it by Major J. J. Morrow, an illustrated address on irrigation was made by Mr. F. W. Newell, director of the Reclamation Service, a paper entitled "Economies in Water and Design of Works Possible by Avoidance of Excessive Seepage Losses" was presented by E. G. Hopson, supervising engineer, U. S. Reclamation Service, a lecture with lantern slide views of Alaska was given by Maurice D. Leekey and one on Mt. Rainier by Asahel Curtis.

The most important feature of the executive session of the convention was the amending of the constitution in relation to the nomination and election of officers. The original amendment as submitted by S. L. F. Deyo, R. Montfort, Alfred Noble, Arthur S. Tuttle and Emli Kuichling, was finally adopted.

While the forenoons of the first three days of the convention were devoted to business the local committee on entertainment provided a varied program for the afternoons and evenings. Trips were made to the Puget Sound Navy Yard, Brown's Bay Logging Camp, Mt. Rainier and the Nisqually Glacier, Victoria, B. C., and several power plants in the near vicinity of Seattle. A formal reception and ball was held on the evening of the third day, immediately following which 100 of the visiting members, as guests of the Northwestern Society of Civil Engineers, left on a midnight train for an inspection of the hydro-electric power plant of the Pacific Coast Power Co., near Tacoma, where the following day was spent in going over the plant and visiting the Mt. Rainier National Park.

A large number of the visiting members made arrangements to visit Alaskan points. One party left on the "Jefferson" the last day of the convention for a 2,300 mile trip to Skagway and return by the inside passage, a trip of 10 days. A second party left on the same trip July 4 and another on the steamer "Mariposa" on July 1 to Southwestern Alaskan points. This trip covers 3,300 miles and includes a 50 mile trip from Cordova to Childs Glacier over the Copper River & Northwestern Ry. The trip takes 14 days.

The business meeting was called to order on the second day of the convention. The secretary, Charles Warren Hunt, did not make a formal report, but read a list of suggestions for the time and place for holding the forty-fifth annual convention in 1913. The largest number of suggestions received named Nashville as the convention city and Baltimore came second. The matter was referred to the Board of Direction of the society with power to act.

A report from the Board of Direction relating to a resolution which was referred to it by the society at the annual meeting on Jan. 18, was read. It relates to the appointment of a special committee to report on the general condition of civil engineers throughout the country. The board's recommendation in this report that an employment bureau be maintained by the society was voted down, and the report was referred back to the board with a request that it make a further investigation and secure statistics of conditions of employment and compensation of civil engineers in the country.

The provision of the amendment to article 7 which seemed to arouse the most interest reads as follows: "Voters may strike out the name of any nominee printed on the ballot for whom they do not wish to vote, and may substitute therefor, in writing or by pasteur, the name of any person eligible for the office. The number of names for each office on the ballot voted shall not exceed the number to be elected to such office, and the voted must be for the proper number of officers resident in each of the seven geographical districts. Ballots not complying with these provisions shall be rejected." The amendment also provides that the Board of Direction shall divide the territory occupied by the membership into seven districts; that at the annual meeting of each year seven members not officers shall be appointed, one from each of the districts, and with the last five past presidents who are living shall serve for a term of two years as a committee to nominate officers for the society.

### Georgia State Firemen's Association

The annual convention was held at Americus, June 25-27. The following program was carried out:

Tuesday, June 25.—Call to order 10 a. m. at city hall. Invocation of Rev. J. B. Lawrence. Address of welcome, by Mayor J. E. Mathis. Response, by Eugene A. Burch, of Hawkinsville. Informal talks on subjects. 2 p. m.—Business session. 4 p. m.—Automobile ride to national cemetery and prison at Andersonville. 6 p. m.—Refreshments at Sumter County Country Club.

Wednesday, June 26.—10 a. m.—Automobile fire truck demonstration. 11.30 a. m.—Business session. 12 noon.—Barbecue at Sumter County Country Club. 2.30 p. m.—Business session. 4 p. m.—Ball game, Americus vs. Atlanta.

Thursday, June 27.—9 a. m.—Closing session.

The following officers were named for the association for 1911-12: President, Chief Thos. Ballantyne, Savannah; vice-president, Chief W. B. Cummings, Atlanta; statistician, Chief W. P. McArthur, Americus; treasurer, Chief Frank G. Reynolds, Augusta; secretary, Chief Eugene A. Burch, Hawkinsville.

### Society of Automobile Engineers

The opening session of the summer meeting was held June 27, in the Pontchartrain Hotel, Detroit, Mich. After the address of President H. F. Donaldson, routine business was taken up and consumed the remainder of the morning. Thursday afternoon was devoted to visits of inspection to motor car factories. In the evening the members sailed for Mackinac, returning to Detroit Saturday night. Four closed sessions were held on shipboard on Friday and Saturday. The papers presented were as follows: "Cost of Work With Gasoline Motor Trucks," Lewis Ruprecht; "Method of Brake Capacity Determination," S. I. Fekete; "Leaf Springs," L. J. Lane; "The Standardization Work of the S. A. E.," Henry Souther; "Stability of Automobile Propeller Shafts," J. M. Thomas; "The Effect of the Relation of Stroke and Bore in Automobile Engines," John Wilkinson; "Motor Sizes and Drive Ratios for Commercial Vehicles," Eugene P. Batzell; "Worm and Helical Gears as Applied to Rear Axles," Frank Burgess; "Standardization and Co-operation in Motor Testing," H. L. Connell; "A Comprehensive Motor Test," Herbert Chase.

### Maryland State Firemen's Association

About 2,500 uniformed men, representing about 50 companies, met at the annual convention, Hagerstown, June 20. The following officers were elected: C. O'B. Diehm, president; J. H. Carroll, Baltimore, vice-president; Edward Stevenson, Lonaconing, secretary; John B. Baker, Manchester, trustee; William B. Usilton, Jr., Chestertown, treasurer.

An amendment to the constitution was adopted making it the duty of the president to visit or cause to be visited by some officer of the association as many companies as possible in order to further the interests of the association. The sum of \$300 was appropriated to pay the traveling expenses of the visiting officer. Westernport was selected as the place for next year's meeting.

### Alabama Good Roads Association

When the annual convention of the Alabama Good Roads Association is held in Birmingham, Ala., October 8-10, there will be demonstrations of road-building machinery and also addresses by some of the strongest and most ardent advocates of good roads. W. W. Finley, of Washington, president of the Southern Railway; B. F. Yoakum, chairman of the board of the Frisco Railroad; T. Coleman Dupont, of Delaware, and Hamil Neill, of Seattle, have been invited to attend the meeting. Every county in Alabama is being urged to send delegates to the convention.

### Rochester Engineering Society

The following officers were elected at a meeting at Reynolds' Library, June 14: President, D. P. Falconer; first vice-president, G. S. Dey; second vice-president, Ivor Lungard; secretary-treasurer, E. F. Davidson (re-elected). D. Pruijman was admitted in membership.

R. M. Searle, vice-president of the Rochester Railway & Light Co., and LaGrande Brown, president and consulting engineer of the Mokelumme River Power Co., of California, were the speakers. Mr. Searle told of the conditions in California as he found them on a recent trip; and Mr. Brown described the labor conditions on the coast.



## PERSONALS

GIBBEN, Dr. A. A., Collingswood, N. J., has been appointed an inspector of roads.

PETTIGREW, John A., Boston, Mass., one of the foremost park experts in America, died at his home in Boston on July 2, aged 68 years. He was consulted on park matters by authorities of this country and Europe. Mr. Pettigrew was superintendent of Franklin Park here for many years. Before coming to Boston he was superintendent of parks in Chicago, Milwaukee and Brooklyn.

STONE, Walter R., Syracuse, N. Y., has been elected president of the Syracuse Park Commission.

VENNARD, Wm. L., Lynn, Mass., has been appointed city engineer.

The following mayors have been elected:

GEORGIA.  
Eatonton—B. M. Pennington.

LOUISIANA.  
Marksville—T. T. Fields.

VIRGINIA.  
Bristol—Geo. M. Warren.  
Cape Charles—L. J. Burbage.

Norfolk—Capt. Mayo.  
Emporia—J. E. Everett.  
Norfolk—Capt. W. R. Mayo.

CALIFORNIA.  
Hillsboro—Henry T. Scott.

## Calendar of Meetings

August 26-27.

International Conference on People's Baths and School Baths.—Conference Scheveningen (The Hague).—A. M. Douwes Dekker, General Secretary, The Hague.

August 26-30.

International Association of Municipal Electricians.—Seventeenth Annual Convention, Peoria, Ill.—Clarence R. George, Secretary, Houston, Tex.

August 27-29.

Union of Canadian Municipalities.—Annual Meeting, Windsor, Canada.—W. D. Lighthall, Secretary-Treasurer, 305 Quebec Bank Building, Montreal, Quebec, Canada.

August 28-30.

Fourth International School Hygiene Congress.—Meeting, Buffalo, N. Y.—Dr. Thomas Storey, Secretary, Convent avenue and 139th street, New York, N. Y.

August 28-30.

Virginia State Firemen's Association.—Twenty-sixth Annual Convention and Tournament, Roanoke, Va.—L. E. Lookabill, Vice-President, Roanoke.

September 6-13.

Congress on Applied Chemistry.—Meeting, Washington, D. C.—Bernard C. Hesse, M.D., Secretary, 25 Broad street, New York, N. Y.

September 17-20.

International Association of Fire Engineers.—Annual Convention, Denver, Col.—James McFall, Secretary, Roanoke, Va.

September 18-19.

New England Water Works Association.—Thirty-first Annual Convention, Washington, D. C.—Willard Kent, Secretary.—Headquarters, Boston, Mass.

September 18-20.

American Public Health Association.—Washington, D. C.—Seldcar M. Gunn, Secretary, 289 Fourth avenue, New York, N. Y.

September 23-28.

Fifteenth Congress on Hygiene and Demography.—Meeting, Washington, D. C.—Dr. John S. Fulton, Secretary, Army Medical Museum, Washington, D. C.

September 24-28.

Chambers of Commerce and Industrial and Commercial Associations.—Fifth International Congress, Boston, Mass.

September 24-26.

Central States Water Works Association.—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

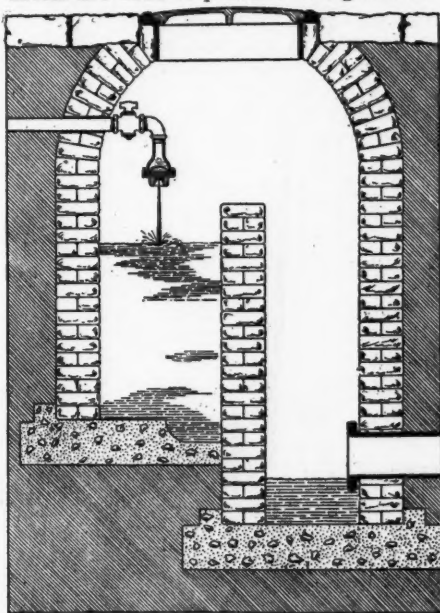
November 12-15.

American Society of Municipal Improvements.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.

## MUNICIPAL APPLIANCES

## Jet Meter for Sewer Flush Tank Services

The Neptune Meter Co., 90 West street, New York City, manufacture the Trident jet meter for filling tanks used for flushing sewers. This meter consists of a bronze casing, with rubber composition diaphragm, with an orifice calibrated to pass a required continuous flow per day under a uniform pressure. There are no moving parts, and the rubber diaphragm prevents corrosion or wear from affecting the orifice; thus the accuracy of the meter is maintained. Two strainers made of perforated sheet metal are used to prevent foreign mate-



METER FOR SEWERAGE FLUSH TANK.

rials in water from obstructing the orifice. The casing of the meter being large, affords a large receptacle surrounding the strainers. The diaphragm and strainers may be easily removed and cleaned of accumulated material, although this is said to be seldom necessary.

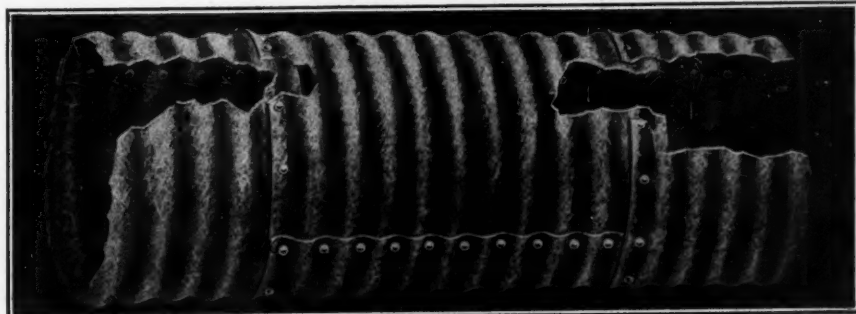
## American Ingot Iron Corrugated Culverts

The Ohio Corrugated Culvert Co., Middletown, O., manufacture corrugated culverts of ingot iron which are claimed to meet all the requirements for road drainage. The practical culvert in service must combine the following qualities: Capacity to carry off excess water; strength to carry weight of the earth covering; strength to resist load vibration and shock of traf-

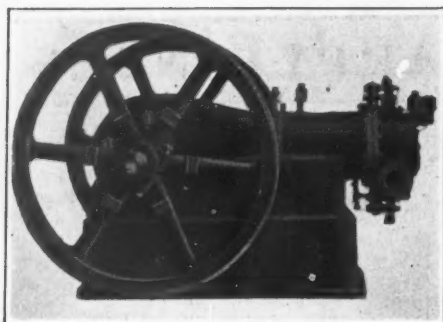
fic; strength to withstand, without injury, the expansion of frozen water and of earth movements caused by frost; provision for contraction and expansion due to extremes of cold and heat; resistance to the frictional wear of the grit and sand in water; ability to resist corrosion due to electrolytic action. The efficient method of joining the sections of this culvert is shown in the illustration. The end corrugation of each section laps over and fits into the end corrugation of the adjoining section. The effect of this is to double the strength of pipe at the point where the joint is made. It will also be noted that the sections are put together with broken joints. That is, the line of rivets is not continuous throughout the pipe, but comes on opposite sides of the pipe in each connecting section, so that the strength is evenly distributed throughout. The overlap provided for the rivet seam is very wide, adding to the strength of the many large ingot iron rivets used, the strength due to the friction of the connecting surfaces. Tests have been made showing that this corrugated culvert will carry 29 times the load sustained by a smooth pipe. A section of 36-inch pipe 8 feet long, tested by A. N. Talbot, carried a total load of 92 tons or 11 tons per foot. The changes in diameter due to this load were only about three inches. The purity of this iron, 99.84 per cent., is the secret of this resistance of this ingot iron to corrosion. Impurities in a metal differ in electric potential from the body of the metal, hence, by reason of the presence of these impurities, electrolytic action commences when the metal is exposed to the elements and corrosion and rapid deterioration follow. Steel being high in impurities, exhibits marked electrolytic activity. Ingot iron, practically free from impurities and homogenous throughout its mass, is practically free from electrolytic action.

## Kerosene Gas Engine

The Wisconsin Engine Co., Corliss, Wis., make the Adams Wisconsin kerosene gas engines in sizes varying from 50 to 200 horsepower. These engines are built as competitors of gasoline engines, having the advantage of cheaper fuel. It is stated that the present output of gasoline is not sufficient to operate continuously at rated capacity over 5 per cent. of the gasoline engines already sold. It is not surprising that the price of gasoline is constantly going up. The Adams-Wisconsin engine is a four-stroke cycle gas engine, which gasifies and uses gas oil or kerosene exactly as ordinary engines gasify



AMERICAN INGOT IRON CORRUGATED CULVERT.



KEROSENE ENGINE.

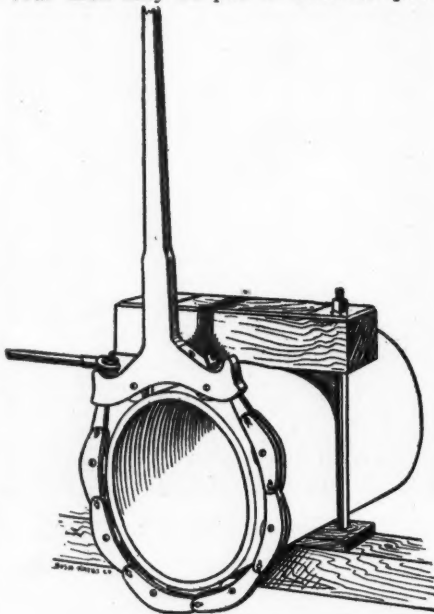
and use gasoline. The gas enters the cylinder cold and the quantity of both gas and air is controlled by the regulator exactly in proportion to the load. The system is claimed to insure complete combustion and a smokeless exhaust at all loads, as well as clean pistons and cylinder heads. Old style kerosene or oil engines depended on heat in some form and a temperature, difficult if not impossible to control, for the vaporization of the oil.

The manufacturers state that their engine has been designed and built with the greatest care and thoroughness. The frame is massive, and frame and cylinder jacket are formed of a single casting. The shaft is large and rigid, the pins and bearings of unusual size. The piston and cylinder barrel are both made of a special mixture of steel and iron as hard as can be machined. The cross head pin and all the small wearing parts of the valve gear are of steel, hardened and ground. The cross head boxes are of bronze. The combustion chamber is nearly spherical in form, free from small pockets and thoroughly cooled by deep water spaces, which surround it. The cranks are counter-balanced to insure smooth running, and the crank can be fully enclosed. Oil is fed directly to moving parts, from which it drains to a common point from which it may be drawn out or filtered. The carburettor is a cast iron box with an aluminum valve, governor operated. The ignition is Bosh magneto. The engines are started with compressed air.

#### Pipe Cutter

D. L. Miller, 310 Keller building, Louisville, Ky., manufactures the Holland pipe cutter shown in the illustration. The Holland cutter is a very effective tool with great power, which can readily be applied to different sized pipe. It is self-adjusting and will accommodate itself to any inequalities in the contour or surface of the pipe during the cutting operation. It cuts quickly and cleanly with comparatively short movements of the handle. A special advantage claimed is that the solid cutter head and handle gives it great power and leverage, whereas with other pipe cutters this is the weak point, owing to the threaded screw in the handle which connects with the cutter head. The manufacturer claims that it is impossible to break the Holland cutter, no matter how much force is applied to it. This cutter will cut short sections of one-inch from a pipe without cracking it. When the machine is used to cut a pipe, one end of the chain is disconnected from one shackle bolt, the cutter head is carried around the pipe and connected to the opposite shackle bolt (the proper number of links being removed or added as re-

quired to make a comparatively close fit), then the nuts are turned with a wrench so that all the cutter wheels are set hard against the pipe. The cutter head, by means of the handle, is reciprocated so that the cutters track one another and produce a clean cut all around the pipe, and the chain is tautened as required during the operation by turning the nuts so as to take up the slack and keep the cutters to their work. The Holland pipe cutter will cut a six-inch pipe in a minute and a half, and will cut a twenty-inch pipe in from six to seven minutes, and intermediate sizes proportionately. The wheels of the Holland pipe cutters are said to always track and make a very clean cut, thereby avoiding any danger of cracking the pipe during the operation. When the Holland pipe cutter is used in a trench a piece of two-inch wrought pipe is slipped over the handle to lengthen same. This extension of handle greatly increases the strength and leverage of the cutter and four men may be put to work recipro-



PIPE CUTTER.

cating the handle as the man in the trench continually tightens the cutter links by turning the nut with a wrench. One tool cuts all sizes of pipe, from four-inch up to twenty-inch.

#### Combination Center Dump Controllable Discharge Bucket and Car

The Acme Equipment and Engineering and Equipment Co., Cleveland, O., make a modification of their controllable discharge bucket mounted on trucks, which provides a means for transporting and depositing concrete, sand, gravel, crushed rock, cement, etc., either by discharging between the rails into forms or bins or by lifting the body part of the car from the trucks and using it as a center discharge bucket.

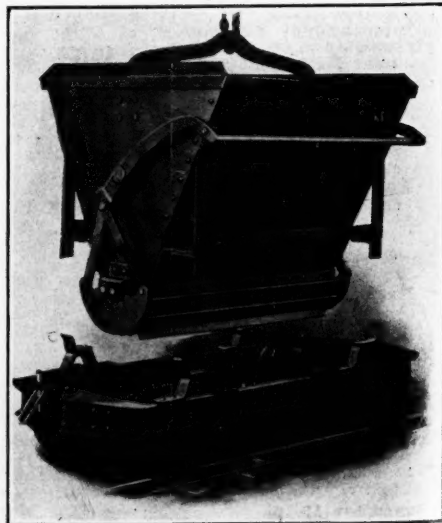
The bottom gates of the car body or bucket are hinged at four pivot points and operated by a pivoted lever connected to the gates by pivoted links.

The controlling leverage is very powerful, one man being able to operate the gates with ease, holding the load under absolute control at all times. When the bucket rests on the truck the bottom of the discharging gates are carried on an approximate level with top of rail, affording a very low discharge. The axles are of cold rolled

steel and are located entirely outside of the body of the car or bucket, thus providing a free, open discharge for the bucket when resting on the truck. The frame of the car is made of steel channel, well braced and securely connected ends. The illustration shows the bucket raised from the truck to be used as a bucket. When the bucket rests upon the truck a rigid connection is formed so far as any horizontal movement is concerned. No material horizontal movement can take place until the bucket has been raised nearly vertical for some distance above the truck. Thus it is seen that when the bucket rests in its seat a rigid connection is formed; at the same time when it is desired to lift the bucket from the truck the disconnection is made without removing a nut or pin—simply hook onto the bail of the bucket and hoist it away the same as though it rested on a flat car. The bucket can be easily set back into the seat, as the ends of the connecting hooks are flanged outwardly, thus providing a means of guiding the bucket to its proper place.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago.—Large orders are lacking, but aggregate of all orders is large. Prices have been advanced 50 cents per ton. Quotations: 4-inch, \$27.50; 6 to 12-inch, \$25.50; 16-inch and up, \$25. Birmingham.—Quotations have been revised and somewhat advanced. The old custom of making a differential of \$1 a ton between 4-inch and larger sizes has been changed and the differential is now \$2 per ton. Manufacturers explain that the increase in the differential is necessitated by the demand for small sizes and the increased cost of production. Revised prices are as follows: 4-inch, \$24; 6 to 8-inch, \$22; 10-inch and up, \$21.50. San Francisco.—Scattering small orders are coming out fairly well, but in the absence of large contracts business is rather quiet. No cities are in the market just now, but a number of large inquiries are expected as many bond issues have been voted for waterworks construction. New York.—Private buying is remarkably active, though this is usually the time for dull trade conditions. A particularly strong demand is noticed for 4 and 6-inch pipe. Quotations: 6-inch, carloads, \$22 and \$23.



ACME COMBINATION BUCKET AND CAR.



**Lead.**—The lead market has been dull and quiet in the last week, although the St. Louis prices of the independent interests strengthened on June 1. The prices of the American Smelting & Refining Co. are unchanged at 4.50c., New York, and 4.42½c., St. Louis.

**Receivership.**—On the application of Frank H. Wheeler and George M. Schebler, creditors of the Atlas Engine Works, Indianapolis, Ind., Judge Weir, of the superior court, appointed Fred C. Gardner receiver for the Atlas company. It was charged that the Atlas company is in danger of insolvency and that the company owes the plaintiffs \$2,387.50 for supplies. The Atlas company manufactures boilers, engines and engine parts. The company has a large amount of material on hand and the receiver will continue to operate the business and complete the products now in the process of manufacture. A representative of the company says the receivership is caused by the temporary suspension of payments of the company's largest customer (one of the large motor companies) from whom there is due approximately \$100,000. This, coupled with a request for indefinite suspension of deliveries on its contracts, is the cause of embarrassment to the Atlas Engine Works in financing its operations. The manufacture of Silent Knight motors, and the Diesel type of crude oil engines on a liberal scale, well under way, will require large working capital not now available to the company.

**Stone Crushing Plant.**—The new quarry of the Edward Balf Co., 26 State street, Hartford, Conn., and the crushers have been put in operation breaking the trap rock. The new quarry has a capacity of 1,200 tons of stone per day. There is a large storage capacity at the crusher, assuring the presence of a large supply to meet orders in every emergency, no matter how great the demand. The trolley lines switch under the dump and the cars are filled ready for delivery to any point between Hartford and Springfield. This includes these points: East Hartford, Windsor, Windsor Locks, Rainbow, East Windsor, Suffield, Warehouse Point, Thompsonville, Longmeadow, Mass., Glastonbury, West Hartford, Farmington, Unionville, Bloomfield, and other places in central Connecticut, which immediately suggest themselves. Stone may be purchased in any quantities by the ton or by the yard. The large new crushing plant is advantageously located. It is equipped with the most modern machinery and money has not been spared to secure labor-saving devices. The large crusher and the two side crushers will turn out 1,200 tons of stone daily. Eighteen large Height roller bearing steel cars bear the stone from the face of the mountain to the pit. The car is dumped into the hopper and the stone is whirled through the three crushers and emerges in the chute below, which empties it into the awaiting cars on the trolley siding. There are three screens through which the stone passes. These sizes are produced: 1½, 1¼, ¾, and ½-inch, as well as screenings and dust, the latter being used as a binder on highways. The plant is run by electric power.

**Rock Asphalt.**—The Uvalde Rock Asphalt Co., which has been organized at Beaumont, with a capital stock of \$150,000, will install machinery for mining and preparing for commercial purposes an extensive deposit of asphalt. The incorporators are J. B. Smyth, R. L. White and W. M. Crook.

**Mexican Asphalt.**—An oil and liquid asphalt seepage which covers an area of many square rods is one of nature's phenomena in the vicinity of Tuxpan, Mexico. It is said to be the largest of its kind in the world, and, according to the expressed opinion of practical oil men, it indicates that there exists beneath it or close by a great reservoir of oil. The thick flow of asphalt and oil from this spring empties into an adjacent lagoon and finds its way into the ocean, which is only a few miles distant. The place where this seepage is situated is not a great distance from the famous Potrero del Llano oil well, which is the largest in the world, its daily capacity being 110,000 barrels. The territory immediately adjacent to the seepage is to be exploited for oil. The liquid asphalt has a tenaciousness that holds it together and a column of it may be lifted two or three feet above the surface by means of a pole without breaking its connection with the pool. There are other seepages of this character in the Gulf Coast region of Mexico, but none anything like as large. In the territory between Tampico and Matamoros, in the vicinity of the old town of Soto la Marina, is a liquid asphalt spring which has been flowing as far back as the memory of the oldest inhabitant of that region runneth. The seepage in the Tuxpan section is at present far removed from railway connection with the outside world, but it is near the route of the proposed Tampico-City of Mexico short line which the National Railway of Mexico is now constructing. Besides this short line to the capital there is embraced in the contract the construction of a railway between Vera Cruz and Matamoros via Tampico. This latter line will parallel the Gulf of Mexico the entire distance and will traverse a region where great oil development is now going on. The asphalt deposits of the Gulf Coast region of this country are known to be extensive, and while no effort has been made as yet to utilize the native product there is a large supply of material obtained as a by-product from the refining of crude oil. For several years past this has been used very largely in street paving in the city of Mexico, Guadalajara and several of the other larger towns of the country. It is said that the crude liquid asphalt that is found in seepage near here, as well as in other localities, is well suited for paving and other purposes without treatment, but that its utilization has been prevented up to this time by lack of transportation facilities. There are experts who think that there is enough asphalt in the Gulf Coast region of Mexico outside of that obtained through the refining of crude oil to supply the world with the material for an untold length of time. It has the peculiarity of being in more or less liquid form and the cost of extracting it would be nothing like as great as where it is gathered in other ways.

**Electric Meters.**—The Sangamon Meter Works, Springfield, Ill., has arranged for the erection of a \$12,000 addition to its factory, the building to be 48 x 128 ft.

**Water.**—The Brunswick Light & Water Co., of Brunswick, Mo., has been incorporated with a preliminary capital stock of \$10,000 to equip public service plants at Brunswick. The incorporators are John Meyers, Jr., L. H. Herring, George W. Cunningham, J. G. Bartow, H. L. Mann and John Meyers, Sr.

**Cement.**—Owing to the increased demand for cement since the Canadian reciprocity agreement, the price of common Portland has advanced 5c. per barrel. The amount of cement that is being used in the West has caused higher prices there, and the Eastern advance is apparently in sympathy with that of the Western manufacturers. (Lighter lots alongside dock, New York.) Portland, per bbl., \$1.38; Rosendale, or natural, in wood, per bbl., 85c. to 90c.; German Portland, \$2.45 to \$2.55.

**Forged Steel Valve.**—A forged steel valve, particularly suitable, owing to its strength, for use in connection with superheated steam and high pressure installations, has been produced by the Patterson-Allen Engineering Co., 2 Rector street, New York City. By the process of manufacture, which involves forging in steel dies, uniform thickness is obtained and the valves are tested to a hydraulic pressure of 1,500 pounds to the square inch. A test of a 6-inch valve at 2,000 pounds pressure, it is mentioned, showed no deflection.

**Filters.**—George W. Smith, secretary of the Phillipsburg, Pa., Board of Trade, has received announcement from the officers of the United States Filter Co., of New York, that after considering the offers of forty-five cities, Phillipsburg has been selected as the place to locate the industry. The concern manufactures all kinds of filters. From 800 to 1,200 men will be employed, of whom seventy-five per cent. are skilled workers, it is said.

**Keokuk Power Plant.**—In connection with the 300,000 h.p. development of the power of the Mississippi River at Keokuk, Ia., there will be a main powerhouse 1,750 ft. long, 123 ft. wide and 133 ft. high above the foundations. The dam extends from Keokuk to Hamilton on the Illinois bank of the river, a distance of 4,568 ft. It is surmounted by a viaduct carrying a 29 ft. roadway, rises 50 ft. above the average river bed, and contains 119 spillways controlled by steel floodgates, each 30 ft. wide by 11 ft. high and operated by an electric hoist. The dam, it is stated, will be the longest monolithic structure in the world, having a total overall length of 9,096 ft. The initial installation of electric generating units will include 15 alternators direct-connected to vertical hydraulic reaction turbines of the single runner type. Each wheel, mounted on a vertical shaft 25 in. in diameter, in a spiral chamber 21 ft. 3 in. in diameter and molded in the concrete substructure, will operate at a constant speed of 57.7 r.p.m. and will have a normal capacity of 10,000 h.p. The electrical apparatus is being furnished by the General Electric Co. and alternating three-phase current will be generated at 11,000 volts. The generators measure 32 ft. in diameter by 12 ft. high, and the total weight of each machine is over 600,000 pounds. The initial equipment, it is thought, will probably be in operation by the middle of 1913.

**Tractor for Fire Apparatus.**—The Martin Tractor Co., Indianapolis, Ind., has been incorporated with \$350,000 capital stock to manufacture the Martin tractor. The company proposes to make 500 machines a year. The directors are Hugh R. Richards, F. B. Davenport, Edward D. Moon and George D. Thornton, Indianapolis, and Charles H. Martin, the patentee. The tractor is now being manufactured under a shop license by an automobile factory in Massachusetts.

**Engineering Specialties.**—The Lunkenheimer Co., Cincinnati, O., who claim to be the largest manufacturers of high grade engineering specialties in the world, have recently issued an illustrated catalogue of 650 pages. The Lunkenheimer line consists of valves and oiling devices, including brass, iron, semi and cast steel valves, whistles, cocks, gauges, injectors, lubricators, oil pumps, oil and grease cups, motor accessories, etc. The company was organized in 1862, when the working force consisted of one man. The factory now employs 1,200 operatives and covers five acres of ground. It is stated in the introduction of the catalogue that the company has always maintained an exacting and vigorous inspection of their products, from the raw material to the finished product, which they believe, with the perfection of detail of correct design, is responsible for the high reputation their products enjoy.

**Electric Company.**—Interests associated with the Westinghouse Electric & Manufacturing Co. have formed a syndicate which has obtained control of the Electric Properties Co., of New York. The object of the syndicate is to extend the operations of the Electric Properties Co. and make it a greater rival than at present of the Electric Bond & Share Co., through which the General Electric Co. finances public service corporations. Among the members of the syndicate are the firm of Stone & Webster, which operates and controls public service corporations all over the United States; the Equitable Trust Co., of New York City; the Westinghouse Electric & Manufacturing Co., itself, and the firm of William Morris, Imbrie & Co. Control of the Electric Properties Co. was acquired from the Westinghouse Machine Co., which owned \$5,000,000 of the \$6,000,000 of its common stock. The new owners, it was said, probably will increase the capitalization when they reorganize the company later with a new board of directors and officers representing their interests. The early acquisition of several new properties is contemplated, although for obvious reasons the location of them is kept secret.

**Gasoline for Fire Apparatus.**—Tenders for gasoline for fire apparatus were recently received by the Paterson, N. Y., Fire and Police Commission. There were three responses to the requests for bids, and in each reply the different companies wrote that, owing to the present unsettled condition of the market, they do not feel like making a contract for a year. However, the competing companies wrote they would be glad to furnish the departments all the gasoline needed at the lowest market price prevailing at the time the orders were given. The price of gasoline at the present time is thirteen cents a gallon. Last year gasoline was purchased for nine cents per gallon.

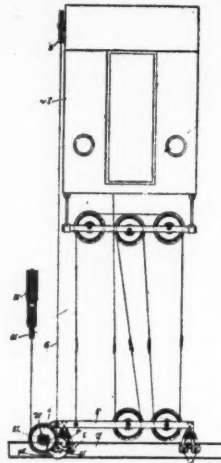
**Stone Quarrying Equipment.**—The New Albany Mfg. Co., New Albany, Ind., reports the demand for stone-quarrying equipment to be fair, with the outlook good. The company recently sold a rather large lot of equipment for shipment to Canada.

**Rubber Tires.**—The Swinehart Tire & Rubber Company, Akron, O., is making preparations for the building of a large plant which will triple its present capacity. The company has secured an option on a 12-acre site on which it proposes to build. The new plant will be equipped entirely with new machinery.

## PATENT CLAIMS

**1,030,468. FIRE-FIGHTING ELEVATOR.** Edwin H. Haney, Stockton, Cal., assignor to Haney Fire Apparatus Co., Stockton, Cal., a Corporation. Serial No. 668,735.

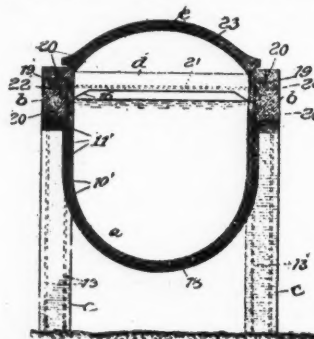
A device of the character described comprising a rail, rollers mounted on said rail, hangers on said rollers, a frame mounted on said hangers and having a pair of projecting arms at one end and an elevator swung from said frame and capable of being raised or lowered, a pulley on said elevator, a pulley journaled in each of said arms and at right angles to said first named pulley, an independent pulley disposed at right angles to said pulleys in said arms and carrying a flexibly hung weight, an endless cable disposed through all of said pulleys, a gear connected with one of said pulleys in one of said arms, a



gear connected with one of said rollers, said last-named gear intermeshing with said first-named gear, as described.

**1,030,839. REINFORCED CONCRETE CONSTRUCTION FOR HYDRAULIC FLUMES.** Wilfred P. Brereton, Portland, Ore. Serial No. 688,985.

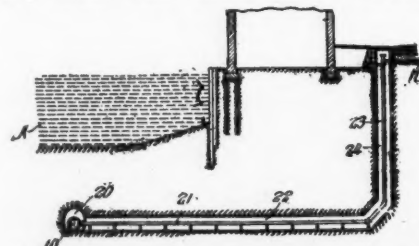
A hydraulic flume comprising suitably supported side beams and a body portion



suspended in hammock-like fashion between said beams and comprising concrete coated upon a reinforcing metal mesh fabric.

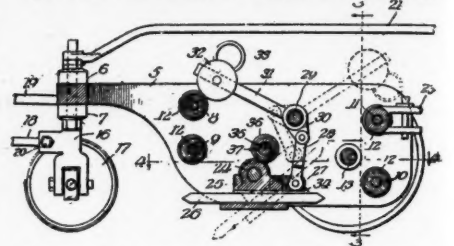
**1,030,587. HIGH-PRESSURE WATER-DISTRIBUTING SYSTEM.** George W. Jackson, Chicago, Ill. Serial No. 442,034.

A high-pressure water system comprising a main tunnel located beneath a waterway, a high pressure main located in said main tunnel, lateral tunnels leading from said main tunnel, vertical



shafts leading to said lateral tunnels, distributing pipes leading from said high pressure main located in said lateral tunnels and extending up through said vertical shafts and street mains connected with said distributing pipe.

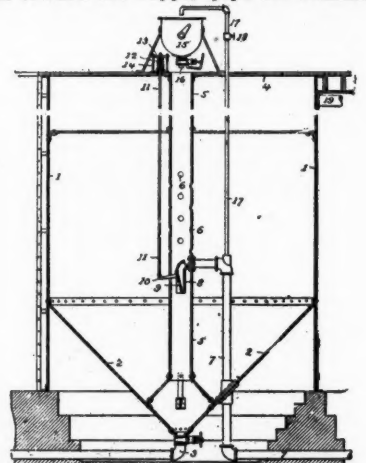
**1,030,287. ROAD SCARIFIER.** Norman De Wind, Chicago, Ill., assignor to Austin Mfg. Co., Chicago, Ill., a Corporation of Illinois. Serial No. 657,396.



In a road scarifier, the combination of a frame, a plurality of tool holders pivotally mounted in said frame, tools carried by said holders, means for tilting the holders on their pivots to raise and lower the ends of the tools, and buffers positioned in the path of said holders to limit the lowering movement of the tools, each of said buffers comprising a plurality of cylindrical sections of different diameters, said buffers being adjustably mounted to permit a desired cylindrical section to be interposed in the path of a holder.

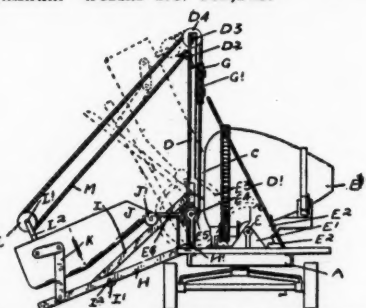
**1,030,366. WATER-PURIFYING APPARATUS.** David L. Winters, Chicago, Ill. Serial No. 645,110.

In a water-purifying apparatus, the combination of a tank, a water supply pipe for same, means surrounding the outlet end of said supply pipe and formed with openings to the front and rear of the outlet of the supply pipe in communication with the water of the tank, and adapted to cause a circulation of the water in the tank toward the supply pipe for remixing,



and means for supplying purifying reagent to the water undergoing treatment.

**1,030,361. FEEDING APPARATUS FOR CONCRETE MIXING MACHINES.** John Lewis Wettlaufer, Toronto, Ontario, Canada. Serial No. 562,148.



In a mixing machine or the like carried on a suitable support, a feeding apparatus comprising standards suitably supported, struts supported near the bottom of the standard, a feeding hopper supported on the struts, a cross shaft secured at the front end of the hopper and a wheel on the cross shaft, a cross bar extending between the standards, a rope connected to the cross bar and extending around the pulley on the cross shaft of the hopper, a grooved wheel suitably journaled at the top of the standards and over which the rope extends, and guiding pulleys located behind the standards, a winding drum and clutch located on a shaft journaled in suitable bearings and around which winding drum the rope extends as and for the purpose specified.



## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
New Jersey..	Jersey City.....	July 15, 2 p.m.....	Urproving Seaview avenue.....	E. B. See, Clerk Board.
Pennsylvania..	Clairton.....	July 15, 8 p.m.....	Constrn. 24,000 sq. ft. cement sidewalks.....	H. M. Gates, Boro. Clk.
Indiana.....	Goshen.....	July 15, 1.30 p.m.....	Macad. highway.....	J. W. Brown, County Aud.
Kentucky.....	Pikeville.....	July 15.....	Constrn. 15,000 yds. brick pav't.....	A. S. Reese, Clk.
Idaho.....	Idaho Falls.....	July 15.....	Constrn. 36,000 yds. bitulithic pav't.....	Frank Beach, Engr.
Pennsylvania..	Marcus Hook.....	July 15, 8 p.m.....	Constrn. 10,600 yds. bit. pav't.....	C. H. Casey, Chm. Comm.
Indiana.....	Madison.....	July 15.....	Constrn. gravel and crushed stone road.....	A. I. Smith, County Surv.
New Jersey...	Roselle Park.....	July 15, 8 p.m.....	Constrn. 14,000 yds. bituminous macadam.....	A. M. Woodruff, Boro. Clk.
New Jersey...	Camden.....	July 15, 8 p.m.....	Pavg. with Belgian blocks and brick.....	J. C. Haines, Chm.
New York.....	Watervliet.....	July 15, 8 p.m.....	Constrn. Hassam granite block or fire brick pavement.....	W. B. Daubney, Clk.
Indiana.....	Anderson.....	July 15, 10 a.m.....	Constrn. gravel roads.....	J. I. Anderson, Ch'man Comrs.
Iowa.....	Ft. Dodge.....	July 15, 9 a.m.....	Constrn. number of streets Portland cement concrete pav't.....	City Clerk.
New Jersey...	Westfield.....	July 15.....	Constrn. 15,000 yds. macadam.....	Chas. Clark, Town Clk.
Ohio.....	Marietta.....	July 15, 1 p.m.....	Constrn. 1 mile bituminated macadam.....	County Commissioners.
Minnesota.....	Aurora.....	July 15, 8 p.m.....	Imp. streets and laying sidewalks.....	C. H. Graham, Vil. Recorder.
Iowa.....	Burlington.....	July 15, 9 a.m.....	Constrn. cement sidewalks.....	H. G. Vollmer, City Engr.
Kansas.....	Iola.....	July 15, 5 p.m.....	Pavg. number of streets.....	B. D. Fey, City Engr.
Illinois.....	Cairo.....	July 16, 7.45 p.m.....	Furn. gravel roads.....	J. Serbian, Chm. Comrs.
Pennsylvania..	Pittsburgh.....	July 16, 10 a.m.....	Pavg. number of roads.....	R. J. Cunningham, County Compt.
Iowa.....	Bloomfield.....	July 16, 8 p.m.....	Constrn. 44,000 yds. brick, asphaltic concrete or cement pav't	A. B. Welch, City Clk.
Colorado.....	Denver.....	July 17, 11 a.m.....	Improving Dist. No. 8.....	S. B. Bradley, Pres. B. P. W.
New York.....	Brooklyn.....	July 17, 11 a.m.....	Improving number of streets.....	A. E. Steers, Boro. Pres.
Ohio.....	Caldwell.....	July 17, noon.....	Constrn. 1 mile brick road.....	County Commissioners.
Washington..	Kirkland.....	July 17.....	Grad. New Hampshire avenue.....	City Clerk.
Ohio.....	Columbus.....	July 17.....	Imp. Lincoln road.....	John Scott, County Clk.
Ohio.....	Youngstown.....	July 18, 10 a.m.....	Constrn. 1.25 miles macadam.....	County Commissioners.
Virginia.....	Norfolk.....	July 18.....	Pavg. 4 streets.....	Boa'd of Control.
Iowa.....	Fort Dodge.....	July 18.....	Pavg. 4 alleys with brick.....	W. T. Tang, City Clk.
Ohio.....	Westerville.....	July 19.....	Improving portions of several streets.....	R. D. Bennett, Vil. Clk.
Ohio.....	Elyria.....	July 19, 10 a.m.....	Constrn. 9 mile slag macadam.....	County Commissioners.
Alabama.....	Elba.....	July 19, noon.....	Constrn. 35 miles sand clay road.....	County Commissioners.
Wisconsin.....	Racine.....	July 20.....	Constrn. 2,100 yds. pav't.....	P. H. Connolly, City Engr.
Ohio.....	Columbus.....	July 22, noon.....	Constrn. brick sidewalks and macadam drive.....	Trustees University.
West Virginia.	Huntington.....	July 22, noon.....	Pavg. with vit. brick 8 streets and alleys.....	L. A. Pollock, Street Comr.
Iowa.....	Clinton.....	July 23, 8 p.m.....	Constrn. 1,250 yds. concrete pav't.....	R. C. Hart, City Engr.
New York.....	Mechanicsville.....	July 24, 8 p.m.....	Constrn. 17,000 bit. macadam.....	L. F. Walsh, Vil. Clk.
Ohio.....	Bryan.....	July 25, noon.....	Pavg. South Main street.....	J. A. Neill, Vil. Clk.
Indiana.....	Delphi.....	July 25, 10 a.m.....	Improving gravel roads.....	Board Commissioners.
Kentucky.....	Pikeville.....	July 25.....	Constrn. 15,000 yds. brick paving.....	A. S. Reese, City Clk.
Illinois.....	Elgin.....	July 25.....	Constrn. 20,000 sq. yds. concrete and 40,000 sq. yds. vit. brick	A. Fehrman, Mayor.
Ohio.....	Cincinnati.....	July 26, noon.....	Treating two roads with oil and improving another.....	Commissioners.
Illinois.....	Rockford.....	July 27 (about).....	Constrn. 27,195 sq. yds. vit. brick pavg. and 12,450 lin. ft. concrete curb and gutter. Cost, \$71,000.....	W. W. Bennet, Mayor; E. Main, Engr.
Ohio.....	Cleveland.....	July 27, 11 a.m.....	Improving Lake Shore blvd. No. 3.....	J. F. Goldenbogen, Clk.
Canada.....	N. Toronto, Ont.....	July 30, noon.....	Constrn. Tarvia on 5 streets, asphalt, asphaltic concrete or other pav't on 8 streets.....	E. A. James, Engr.
Pennsylvania..	Harrisburg.....	July 30.....	Constrn. nearly 20 miles State highway.....	E. M. Bigelow, Comr.
Ohio.....	Cleveland.....	Aug. 3, 11 a.m.....	Improving Green road.....	J. F. Goldenbogen, Co. Clk.
Kansas.....	Atchison.....	Aug. 5.....	Imp. road.....	Edw. Iverson, County Clk.
Illinois.....	Kankakee.....	Aug. 30 (about).....	Constrn. 65,000 sq. yds. vit. brick paving.....	B. W. Alpinier, Mayor; R. D. Gregg, City Engr.
<b>SEWERAGE</b>				
Michigan.....	Lowell.....	July 15, 7.30 p.m.....	Constrn. 6-block sewer, 16 manholes and catch basins.....	H. J. Taylor, Vil. Clk.
North Carolina	Monroe.....	July 15.....	Constrn. sanitary sewer system.....	B. H. Johnson, City Clk.
Canada.....	Watrous, Sask.....	July 15.....	Constrn. sewers and water works.....	Jos. Gaye, Sec'y-Treas.
New Jersey...	Westfield.....	July 15.....	Constrn. 2,700 ft. 8 to 10-in. clay pipe sewer.....	A. W. Vars, Town Engr.
Minnesota.....	Thief River Falls	July 15.....	Constrn. 6,900 ft. 4 to 12-in. sewer pipe, etc.....	W. H. Quist, City Clk.
Pennsylvania..	Harrisburg.....	July 15, noon.....	Constrn. sewers in four streets.....	E. E. Fritchey, Comr.
Pennsylvania..	Kensington.....	July 16, 7.30 p.m.....	Constrn. brick stone sewer.....	W. J. Plough, Chairman Com.
Ohio.....	East Youngstown	July 15.....	Constrn. sewers in several streets.....	P. J. Carney, Clk.
Canada.....	High River.....	July 16, 8 p.m.....	Constrn. disposal plant and pumping machinery.....	G. E. Mack, Sec'y-Treas.
North Carolina	Carthage.....	July 16.....	Constrn. sewage system and water works.....	W. B. Jennings, Sec'y.
Indiana.....	Shelbyville.....	July 16, 5 p.m.....	Constrn. sewage pumping station.....	L. E. Webb, City Clk.
North Carolina	Carthage.....	July 16, 2 p.m.....	Constrn. sewers and water works.....	W. G. Jennings, Sec'y.
Iowa.....	Primghar.....	July 18.....	Constrn. 1,800 ft. 18-in. pipe sewer.....	E. A. Rosecrans, Town Clk.; M. Tschirgi & Sons, Engrs., Dubuque.
Iowa.....	Creston.....	July 18, 8 p.m.....	Constrn. 8-in. sanitary sewer.....	J. F. Golden, City Clk.
Iowa.....	Burlington.....	July 20.....	Constrn. concrete arch sewer; cost, \$50,000.....	H. G. Vollmer, City Engr.
Michigan.....	Howell.....	July 24.....	Constrn. sanitary sewers.....	J. A. Hagman, Vil. Clk.
Texas.....	Dallas.....	July 24.....	Constrn. sewage plant.....	City Commissioners.
Illinois.....	Elgin.....	July 25.....	Constrn. 177,500 lin. ft. vit. pipe sewer.....	M. H. Brightman, City Engr.
Illinois.....	Rockford.....	July 27.....	Constrn. sewers in number of streets, cost \$110,000.....	E. Main, City Engr.
Kansas.....	Independence.....	July 30.....	Constrn. ½-mile 24-in. to 4-ft. monolithic or brk storm sewers	A. H. Kriehagen, City Clk.
California.....	Sausalito.....	Aug. 1.....	Constrn. sewer system; cost, \$50,000.....	H. W. Chadwell, Town Engr.
Illinois.....	Aurora.....	Aug. 1 (about).....	Constrn. 2,000 lin. ft. 9-33-in. and 1½ miles 9-33-in. vit. pipe sewer	M. F. Tarble, City Engr.
<b>WATER SUPPLY</b>				
West Virginia	Parkersburg.....	July 15.....	Constrn. concrete reservoir.....	Frank Good.
North Dakota	Fargo.....	July 15, 5 p.m.....	Furn. chemicals for water purification.....	A. R. Watkins, City Aud.
Canada.....	Winnipeg.....	July 15, 11 a.m.....	Furn. 12-in. c. l. pipe, specials, hydrants, valves, etc.....	Boa'd of Control.
Nebraska.....	Hardington.....	July 16.....	Extend. well system.....	D. Ready, City Clk.
Canada.....	Estevan.....	July 16.....	Constrn. water works.....	L. A. Duncan, Sec'y-Treas.
West Virginia.	Parkersburg.....	July 16.....	Constrn. 6,000,000-gal. concrete reservoir.....	L. E. Chapin, Engr., Pittsburgh.
Indiana.....	Shelbyville.....	July 16.....	Constrn. pumping station and installing machinery.....	City Clerk.
Canada.....	High River, Alta.....	July 16.....	Constrn. pump house, machinery, well ejector and disp wks.	G. E. Mack, Sec'y-Treas.
Texas.....	Dallas.....	July 17, 2 p.m.....	Constrn. purification plant.....	J. B. Winslett, City Sec'y.
Kansas.....	Independence.....	July 18, 2 p.m.....	Constrn. 4,000,000-gal. pumping engine.....	G. H. Kriehagen, City Clk.
Ohio.....	Portsmouth.....	July 18.....	Constrn. pumping station, well, intake, reservoir, filtration plant and pumping machinery.....	J. M. Williams, Dir. Pub. Serv.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRING TO
Illinois.....	Greenville.....	July 19, 8 p.m.....	Constrn. water works extension, comprising 3 miles 4 6-in. cast iron water mains, etc.....	City Clerk.
Ohio.....	Worthington.....	July 19.....	Constrn. water works.....	W. P. Vest, Vil. Clk.
Ohio.....	Rockfort.....	July 19, noon.....	Constrn. water mains.....	F. Feuchter, Clk.
Utah.....	Wellsville.....	July 20, 8 p.m.....	Constrn. water works.....	J. J. Hendry, Recorder.
New York.....	White Plains.....	July 22.....	Furn. and installing compressor.....	Commissioners.
Canada.....	Kindersley, Sk.....	July 22, 8 p.m.....	Constrn. 15,000 ft. 4 to 10-in. steel pipe, 400 tons c. i. pipe, valves, hydrants, tanks, filters, boilers, pumps, engines, electrical equipment.....	D. McTavish, Sec'y-Treas.
Texas.....	Dallas.....	July 24 (about).....	Constrn. water filtration plant.....	Commissioners.
Minnesota.....	Duluth.....	July 27, 4 p.m.....	Furn. spiral united steel pipe and specials.....	L. N. Case, Mgr.
South Carolina.....	Columbia.....	July 30.....	Constrn. coagulating basin at water works.....	F. C. Wyse, Engr.
North Carolina.....	Smithfield.....	July 31.....	Constrn. water works, sewer system and lighting plant.....	J. A. Wellons, Mayor.
Spain.....	Madrid.....	July 31.....	Constrn. filtration and purification plant.....	Canal Commission.
Louisiana.....	New Orleans.....	Aug. 1.....	Constrn. reinforced concrete siphon.....	F. S. Shields, Sec'y.
Louisiana.....	New Orleans.....	Aug. 24, noon.....	Constrn. reinforced concrete siphon.....	F. S. Shields, Sec'y.
<b>LIGHT AND POWER.</b>				
Washington.....	Spokane.....	July 16, 2 p.m.....	Install. 94 electroliers and maintaining same.....	Comr. Fassett.
Iowa.....	Bennett.....	July 16.....	Constrn. lighting plant.....	J. B. Vaughan, Town Clk.
Canada.....	Moose Jaw.....	Aug. 1.....	Furn. 500-kw. steam-driven generating set.....	City Commissioners.
<b>FIRE EQUIPMENT</b>				
Mississippi.....	Clarksdale.....	July 16, 8 p.m.....	Furn. motor comb. and chemical engine.....	M. W. Purnell, City Clk.
Ohio.....	Canton.....	July 16, noon.....	Furn. motor-driven aerial truck, 2 motor chem. engines, hose wagons & fire. engines comb., 2 motor comb. chem. & hose wagons, 1 motor comb. squad chem. & hose wagon and 1 chief's car.....	W. H. Paulus, Sec'y.
Ohio.....	E. Youngstown.....	July 22, noon.....	Furn. combination chemical and hose wagon.....	P. J. Carney, Vil. Clk.
Pennsylvania.....	Sharon.....	Aug. 6, noon.....	Furn. automobile fire engine.....	O. J. Denny, Boro. Sec'y.
<b>BRIDGES</b>				
Illinois.....	Mascoutah.....	July 15, 10 a.m.....	Constrn. reinforced concrete bridge.....	Chas. Stock, Township Clk.
Illinois.....	Winchester.....	July 16, 1 p.m.....	Constrn. 3 reinforced concrete bridges and 1 abutment.....	Town Clerk.
Pennsylvania.....	Williamsport.....	July 16, noon.....	Constrn. 6 concrete steel bridges also 1 stone arch bridge, etc.....	A. P. Zuber, Co. Clk.
Indiana.....	Muncie.....	July 17, 1.30 p.m.....	Constrn. 6 bridges.....	F. M. Williams, County Aud.
Kansas.....	Olathe.....	July 18.....	Constrn. 9 concrete bridges.....	County Clerk.
Pennsylvania.....	Wilkes-Barre.....	July 19.....	Constrn. 22 county bridges.....	County Commissioners.
Illinois.....	Baylis.....	July 20.....	Constrn. concrete bridge.....	W. M. Huffman, Town Clk.
Ohio.....	Cleveland.....	July 20, 11 a.m.....	Constrn. bridge work.....	J. F. Goldenbogen, County Clk.
Pennsylvania.....	Shaler.....	July 20, 6 p.m.....	Constrn. reinforced concrete bridge.....	P. E. E. Ilch, Town Clk.
Indiana.....	Covington.....	July 22.....	Constrn. 2 concrete bridges.....	C. A. Baldwin, City Clk.
Ohio.....	Cleveland.....	July 27, 11 a.m.....	Constrn. concrete bridge.....	J. F. Goldenbogen, Clk.
Canada.....	Calgary.....	July 31.....	Constrn. 3 concrete bridges.....	J. M. Miller, City Clk.
<b>MISCELLANEOUS</b>				
North Dakota.....	Fargo.....	July 15, 5 p.m.....	Furn. 350 tons lime, 125 tons sulphate of iron, 125 tons sulphate alumina, 60 tons soda ash, 25 tons hypochloride.....	A. R. Watkins, City Aud.
Texas.....	Dallas.....	July 15, 2 p.m.....	Constrn. city hall; cost, \$400,000.....	City Commissioners.
New York.....	Rochester.....	July 15, noon.....	Furn. 28,000 bulbs and plants.....	Park Commissioner.
Ohio.....	Cleveland.....	July 15, noon.....	Install. refrigeration system in market house.....	W. J. Springborn, Dir. Pub. Serv.
Texas.....	Fort Stockton.....	July 15, 9 a.m.....	Constrn. alterations to jail and furn. steel materials.....	F. Rooney, County Clk.
Alabama.....	Anniston.....	July 16.....	Constrn. jail.....	County Comr.
Indiana.....	Marion.....	July 16, 7.30 p.m.....	Bldg. market and city hall.....	F. R. Heck, City Clerk.
Minnesota.....	St. Paul.....	July 16, 5 p.m.....	Furn. oil distributing machine, 3/4-yd. concrete mixer, 10-ton macadam roller, creosoted block, sandstone block, Portland cement, granite curb, sewer pipe, catch basin covers.....	O. Claussen, Comr. Pub. Wks.
Ohio.....	Toledo.....	July 18, noon.....	(A) Furn. 5-ton motor trucks for garbage; (B) Delivering garbage by means of motor trucks.....	F. G. Stockton, Dir. Pub. Serv.
New York.....	Rochester.....	July 18, noon.....	Constrn. portable houses.....	Board Education.
New York.....	Brooklyn.....	July 18, 3 p.m.....	Constrn. bronze work at Institute of Arts.....	C. B. Stover, Pres. Park Comm.
Pennsylvania.....	Reading.....	July 19, 8 p.m.....	Furn. machinery for manual training school.....	F. Roland, Jr., Sec'y.
Ohio.....	Toledo.....	July 24, 10 a.m.....	Constrn. concrete abutments on road.....	A. J. Hatch, County Surv.
Pennsylvania.....	Chester.....	July 29, noon.....	Constrn. alterations to court house.....	County Commissioner.
Massachusetts.....	Malden.....	Aug. 1, 8 p.m.....	Furn. and placing several safes iron work and steel shelving.....	S. A. Conner, Inspector of Bldgs.
Maine.....	Portland.....	Aug. 5, noon.....	Constrn. police station and jail work.....	O. C. Curtis, Mayor.
Louisiana.....	New Orleans.....	Aug. 16, noon.....	Furn. one 40-ton & one 10-ton elec.-operated traveling crane.....	F. S. Shields, Sec'y.

## STREET IMPROVEMENTS

**Glendale, Cal.**—City Engineer Lynch announces proceedings for improvement of Vine st., from Central ave. to San Fernando rd., and Raleigh st., from Granada st. east, are to commence immediately.

**Los Angeles, Cal.**—Construction of new road connecting Los Angeles with Venice, Ocean Park and Santa Monica, is being discussed.

**Sacramento, Cal.**—State Highway Commission has selected the Sisson-to-Coles route for entrance into Oregon for the great State highway from the north. Surveys for a number of routes have been ordered in other parts of the State.

**Sacramento, Cal.**—State Highway Commission is considering bids for building of four strips of highways, first called for under \$18,000,000 highway bond issue. Four strips of road which will be constructed as soon as possible after contracts are let aggregate 37 1/2 miles. Roads follow southern boundary of South San Francisco to city of Burlingame, 5 1/2 miles; commencing at southerly boundary of Mendocino County, near Cloverdale, and extending northerly to Feliz Creek bridge, Mendocino County, 13 miles; beginning at the northwesterly boundary of city of Medera, then going northwesterly end extending about 4 miles beyond town of Berenda, Madera County, 10 miles; beginning one-half mile southeasterly from Morrison's crossing, in Yuba County, and extending northwesterly to Yuba River bridge at Marysville, 9 miles.

**Stratford, Conn.**—Appropriation of \$600 has been made for repairing and widening California st., and about \$3,000 for widening of Ferry rd.

**Wilmington, Del.**—The \$100,000 Wilmington bonds recently sold to New York broker have been signed by Mayor Howell and City Treasurer Lednum, and money delivered to city for street improvements.

**Washington, Ga.**—In election to determine whether city should issue \$30,000 of bonds for street improvements, issue was carried by overwhelming majority.

**Bloomington, Ill.**—Emerson and Clinton sts. will be paved with brick, about 14,235 sq. yds. Elmer Folsom is City Engineer.

**Greenup, Ill.**—Village Board contemplates paving around the square and several streets.

**Springfield, Ill.**—Commercial Association has raised funds for paving two miles road, 18 ft. wide, with 8-in. concrete pavement. Work will be done under direction of State Highway Engineer A. N. Johnson.

**Taylorville, Ill.**—County Surveyor J. S. Michels has completed plans and estimates for 33,000 sq. yds. paving; 1,820 sq. yds. asphaltic concrete, balance brick with asphalt filler, both on 4- and 6-in. concrete foundations; also 26,255 lin. ft. combined curb and gutter. Cost, \$79,204.50. Work to be completed this season.

**Muncie, Ind.**—Board of Public Works has passed resolutions providing for paving several streets, sidewalks and alleys.

**Cedar Falls, Ia.**—Oiling of boulevard is being considered.

**Louisville, Ky.**—Early in fall Board of Public Works will advertise for bids for paving with vitrified block, at estimated cost of \$82,000, of Floyd st., from Burnett ave. to G st., and from Southern Ry. to city limits, and Brook st., from Avery

to G st. Aggregate distance to be paved is 7,400 ft.

**Northampton, Mass.**—Extensive street improvements are being planned; cost of Mt. Tom highway is estimated at \$36,000.

**Grand Rapids, Mich.**—Board of Public Works has decided to readvertise for new bids for laying of asphaltic mixture on Eastern ave. and Fountain st.

**Grand Haven, Mich.**—Plans are being prepared by the W. J. Sherman Co., Toledo, O., for street improvements.

**Jackson, Mich.**—Supervisors of Hinds County will probably report favorably \$200,000 bond issue for roads. Intention is to build highway west from Jackson to county line.

**Duluth, Minn.**—Petition providing for grading and paving of Fifth st., from 38th to 43d aves. west, is being circulated by residents in that section of city. Cost of paving is estimated by City Engineer's office at \$13,550.80. Engineer's estimate provides for gravel surface and concrete gutter and curbing.

**St. Paul, Minn.**—Preliminary orders for macadamizing Lexington ave., from Como Park to city limits and for arcade st. have been made.

**Carthage, Mo.**—Sum of \$48,000 has been raised toward construction of 20 miles of Kansas City-Arkansas highway.

**St. Louis, Mo.**—Street Commissioner Travilla has decided to pave Locust st. with wood blocks at cost of \$4,000.

**Warrensburg, Mo.**—City Council has passed resolutions providing for paving of Maguire, S. Holden, Ming, Grover and Mulberry sts.

**Atlantic City, N. J.**—Following ordinances have been passed: To pave Pennsylvania ave., north of Pacific, for



200 ft., and to pave Congress ave., Callaway pl. and other avenues.

**Millville, N. J.**—Recorder has been ordered to publish notice of intent to introduce a street paving ordinance.

**Trenton, N. J.**—It has been decided to repave Pennington ave., expense to be borne by county and city.

**Niagara Falls, N. Y.**—Nearly every paved street in the city will be repaired as soon as possible.

**Niagara Falls, N. Y.**—Resolution has been adopted for paving and macadamizing of various streets. Thos. H. Hogan, City Clerk.

**Schenectady, N. Y.**—Ordinance has been passed directing grading, curbing of the Plaza, from end of present pavement to easterly street line of Waverly pl.

**Schenectady, N. Y.**—Commissioner of Public Works Charles A. Mullen will soon call for bids for from 100,000 to 150,000 sq. yds. asphalt laid under Milwaukee specification.

**Schenectady, N. Y.**—Ordinance has been passed establishing grade and directing grading of Bradt st., from Phillips st. to Broadway.

**Solvay, N. Y.**—At election June 27 citizens voted in favor of following improvements: Paving of Milton ave., from city line to plant of Frazer & Jones Co., at cost of \$72,000; finishing of a number of streets in southern portion of village, at cost of \$51,000; erecting large village building, to cost \$20,000, to house village offices.

**Syracuse, N. Y.**—Proposition for paving of Milton ave., from city line to plant of Frazer & Jones Co., at cost of \$72,000, has been carried; also another for finishing of number of streets in southern part of village, at cost of \$51,000.

**Syracuse, N. Y.**—Highway Committee has reported favorably on matter of improving Seneca turnpike east to Salina st., from Midland ave., that being connecting link between Onondaga Valley, State and County Highway No. 1756 and State Route No. 10.

**Dayton, O.**—Council has determined to improve Clifton drive by constructing good roadway, cement curb gutter and sidewalk.

**Grand, O.**—Bids will be received by Village Clerk until 12 o'clock noon, July 22, for purchase of \$24,500 worth of bonds for improvement of State st. by constructing storm sewers. James E. Stotler, Clerk.

**Struthers, O.**—Bids will be received by Village Clerk until 12 noon, July 24, for purchase of \$1,443.16 of bonds for construction of brick pavement on State st. Lea Eisenbraun, Clerk.

**Toledo, O.**—Declaratory resolutions have been passed for paving Ewing st.

**Toledo, O.**—Ordinance has been passed providing for sweeping, cleaning and sprinkling of sundry streets.

**Avoca, Pa.**—According to District Engineer John I. Riegel, Main st. will be paved this year with vitrified brick. Bond issue of \$30,000 passed a few months ago will provide funds for borough's share.

**Bethel, Pa.**—Highway Department has authorized building of State road in Bethel Township in vicinity of Shirksville, which, with concrete bridges, will cost \$20,000.

**Erie, Pa.**—Councilman Watson's ordinance providing \$10,000 bond issue for widening and improving State st. has been passed.

**Erie, Pa.**—Because bids were believed to be high, Councils did not award contract on E. Fifth st. pavement. On motion of Select Councilman Bauschard, all bids were rejected. Lowest bid was by Contractors J. & M. Doyle, asking \$1.48 for class B asphalt pavement with Bessemer brick gutters, and \$1.55 for Bessemer block pavement. Artificial stone curbing was offered at 35 cts. per ft. Of the other bids, Mayer Bros. Construction Co. asked \$1.59 for asphalt and \$1.65 for brick. John McCormick & Bro. wanted \$1.57 for asphalt and \$1.65 for brick. F. G. Diefendorf bid on brick at \$1.59.

**Harrisburg, Pa.**—Council has passed an ordinance for paving Geiger st.

**Marcus Hook, Pa.**—Burgess H. A. Lewis has approved ordinance for paving McClenachan Terrace and laying sidewalks on several streets.

**Mauch Chunk, Pa.**—Carbon County Commissioners are determined that Broad Mountain rd., between Mauch Chunk and Hazleton, which is completed about two-thirds of distance by county at expense approximating \$50,000, shall be finished by State as soon as possible.

**Millville, Pa.**—Ordinance will be introduced July 26 for street paving.

**Hilltown, Pa.**—County Commissioners of Bucks County joined with Supervis-

ors of Hilltown Township in asking for State aid in building 10,691 ft. of road from Doylestown pike, at Dublin, to point where Bethlehem pike and State rd. meet in Hilltown.

**Shamokin, Pa.**—Citizens will vote in November on issue of \$100,000 bonds for paving. W. H. R. Smink is Chief Burgess.

**York, Pa.**—Plan of City Engineer Warner for paving of East Market st., between Sherman and Lehman sts., has been approved.

**Atlanta, Tex.**—\$35,000 road bonds carried in election here.

**Beaumont, Tex.**—Bond issue of \$100,000 is recommended for completion of street improvements.

**Corpus Christi, Tex.**—Plans prepared by Acting Engineer Philbrick for street paving have been accepted.

**Dallas, Tex.**—Commissioner Lee has presented resolutions for paving following sts.: Tenth, Lancaster to Bishop; Lancaster, viaduct to Jefferson; McKinney, Routh to Haskell; Haskell, Ross to State; San Jacinto, Akard to Germania; Germania, Swiss to Ross; Colonial, Forest to Lenway; Collett, Columbia to Victor; Reiger, Collett to Munger; Carroll, Ross to Swiss; Pacific ave., Bryan to Akard; Pennsylvania, Colonial to Oakland; Preston, Commerce to Main. From best estimates at hand, he believes that the above streets, together with Exposition and Parry ayes., already contracted for, will amount to \$152,000.

**Dallas, Tex.**—Street Commissioner J. E. Lee has submitted the following list of streets to be paved in the fiscal year 1912-13: Tenth, Lancaster to Bishop; Lancaster, viaduct to Jefferson; McKinney, Routh to Haskell; Haskell, Ross to State; San Jacinto, Akard to Germania; Germania, Swiss to Ross; Colonial, Forest to Lenway; Collett, Columbia to Victor; Reiger, Collett to Munger; Carroll, Ross to Swiss; Pacific ave., Bryan to Akard; Pennsylvania, Colonial to Oakland; Preston, Commerce to Main.

**El Paso, Tex.**—Bond issue for \$15,000 to extend county rd. 25 miles further east in county will be voted on shortly in whole county.

**El Paso, Tex.**—Petitions asking County Commissioners to issue bonds to amount of \$150,000 for construction of proposed road from Fabens to Ft. Hancock have been drawn for circulation. Those who are backing the proposition declare that the amount will extend the present macadam county road east from Clint to Ft. Hancock and leave enough to construct dirt road from Ft. Hancock to eastern county line. Issue of \$250,000, they say, would construct asphalt-topped macadam road, such as that between El Paso and Clint, all way across county. They are only asking for \$150,000 at first.

**Fort Worth, Tex.**—City Engineer has reported cost of paving Jennings ave. at \$9,122.42.

**Gonzales, Tex.**—The \$150,000 bond issue is now available for road work, and it is likely that work of improving roads will go forward.

**Hearne, Tex.**—County Commissioner W. H. Ely has reported that Commissioners' Court has ordered election for bond issue for \$150,000 for good roads from this precinct (2) of Robertson County.

**Paris, Tex.**—Vote on issuance of bonds for \$140,000 for street paving, sanitary sewers and fire department was more than 6 to 1 in favor of propositions.

**San Angelo, Tex.**—Citizens voted favorably on bond election for good roads and bridges July 2.

**Sherman, Tex.**—At special session of Grayson County Commissioners' Court it was decided to advertise for bids for construction of permanent roads in Sherman district. Plans and specifications have been completed by Engineer Johnson, and Consulting Engineer Nagle, of Agricultural and Mechanical College, has about completed his examination of them and will make his report to court shortly.

**Taylor, Tex.**—Property taxpayers voters of city of Taylor will vote upon proposition of issuance by city of municipal bonds in sum of \$25,000 for purpose of paving business streets.

**Everett, Wash.**—Recommendation has been made to City Council for improvement of Fulton st., from 16th to 19th st.; estimated cost, \$2,890.

**Puyallup, Wash.**—Council is considering paving Pioneer st. County will pave road meeting it.

**Spokane, Wash.**—Grading, paving, etc., of Monroe st. is being considered.

**Tacoma, Wash.**—Paving of roadway from N. 45th and Stevens sts. to Point Defiance Park, has been ordered. Cost, \$69,959.

**Mannington, W. Va.**—Citizens are slated to have voted to issue \$300,000 bonds for road improvements.

**Portage, Wis.**—Six thousand dollars has been raised for good roads leading to Portage. Twenty-two precincts in Columbia County out of 36 have voted \$15,250 for good roads, and amount available from State in this county this season is \$9,098.37.

**Racine, Wis.**—Good progress is being made in raising contributions for improving Lake Shore rd.

**Superior, Wis.**—Property owners have petitioned for paving Iowa ave.

#### CONTRACTS AWARDED.

**Glendale, Cal.**—By City Council, to Peter L. Ferry, of Tropic, Cal., at \$13,000, for improvement of Sixth st., by grading, paving and curbing.

**Los Angeles, Cal.**—For grading, graveling and constructing cement curb, gutter and sidewalk, granite block gutter and storm drains in Commonwealth ave., from Temple st. to Melrose ave., to H. F. Hewitt Co., at \$12,882.

**Oakland, Cal.**—By Council, to Ransome-Crummey Co., for grading Alameda ave., including sidewalk (cutting), 44 cts. per cu. yd.; grading street, including sidewalk (filling), 44 cts. per cu. yd.; macadamizing with oil-macadam, 8½ cts. per sq. ft.; curbing with redwood, 11 cts. per lin. ft.; gutters, with broken rock, 10 cts. per sq. ft.; 10-in. by 36-in. inlet, \$20 each; culvert, 30-in. by 40-in. concrete culvert, \$2.80 per lin. ft.; 8-in. by 30-in. corrugated iron culvert, \$2.80 per lin. ft.; 14-in. conduit, 80 cts. per lin. ft.; 10-in. conduit, 40 cts. per lin. ft.; 6-in. by 21-in. inlet, \$15 each.

**Oakland, Cal.**—By City, for improvement of Boston ave., to W. J. Schmidt, at following prices: Grading street, including sidewalk (cutting), 55 cts. per cu. yd.; macadamizing with oil macadam, 9¼ cts. per sq. ft.; curbing with redwood, 11 cts. per lin. ft.; gutters with concrete, 11 cts. per sq. ft.; culvert, corrugated iron, \$1.50 per lin. ft. Frank R. Thompson, City Clerk. Also for improvement of Maple ave., to W. J. Schmidt, at following prices: Grading street, including sidewalk (cutting), 50 cts. per cu. yd.; macadamizing, 9¼ cts. per sq. ft.; curbing, 11 cts. per lin. ft.; gutters, 11 cts. per sq. ft.; Y branches, 50 cts. each extra; wooden bridges, \$7.50 each; culverts, \$1.50 per lin. ft.; corrugated iron culverts, \$1.50 per lin. ft.; furnishing and laying 8-in. pipe, 85 cts. per lin. ft.; manholes, complete, \$45 each; lampholes, complete, \$10 each. Frank R. Thompson, City Clerk.

**Sacramento, Cal.**—Contracts aggregating \$295,000 for four strips of roadway to be built under \$18,000,000 State highway bond issue in Madera, San Mateo, Mendocino and Yuba counties have been let by the State Highway Commission. Lowest bidder in each case received the award. Total distance of four strips is 37 miles. The Ransome-Crummey Co. was awarded contract for construction of 10-mile road from Madera City to Califa, Madera County, their bid for which amounted to \$72,091. F. R. Ritchie & Co., of San Francisco, was given contract for construction of 5.4-10 miles strip of roadway from South San Francisco to Burlingame, their bid being \$89,368. General Contracting Corporation, of San Francisco, received contract for 13-mile strip of roadway from the south boundary of Mendocino County to Hopland, for which their bid was \$67,425. F. E. Frey, of Sacramento, was successful bidder for work of constructing 9-mile strip from Morrison's crossing, Yuba County, to Marysville, for which his figure was \$67,780.

**Wilmington, Del.**—By State Highway Commissioner, for constructing roads: Ginn's Corner, Blackbird, to Horrigan Contracting Co., city, \$8,300; Kirkwood rd., to John A. Clark, city, \$10,400; Tybout's Corner, to John A. Clark, \$7,100; Price's Corner, to Juniata Paving Co., Empire Bldg., Philadelphia, Pa., \$18,630.76.

**Pocatello, Idaho.**—By City Council, to Strange & MacGuire, Salt Lake City, Utah, at \$86,635 for paving of about 20 blocks with bitulithic.

**Aurora, Ill.**—For paving Grand ave. with asphalt, to McCarthy Improvement Co., of Davenport, Ia., for \$21,093.

**Elgin, Ill.**—By City, to McCarty Improvement Co., Davenport, Ia., at \$58,500, for constructing 24,439 sq. yds. bituminous paving and 11,506 lin. ft. combination curb and gutter in Spring st.

**Kankakee, Ill.**—By City Council, to J. Hayes Sons Co., city, at \$23,800, for 12,000 sq. yds. vitrified brick paving in Court st.

**Paxton, Ill.**—For paving W. Patton and E. State sts., to E. J. Westbrook, of Paxton, for \$12,893.

**Virginia, Ill.**—For paving in District No. 2, to Illinois Concrete Construction Co., of Springfield, for \$21,483.

**Crawfordsville, Ind.**—By City Council, for grading, graveling and cement curb and gutter in Prospect st., to J. Berry, at \$2,759; and for cement walks and concrete curb and gutter in W. Main st., to W. Buchanan, at \$1,436.

**Elkhart, Ind.**—By County Commissioners, to Northern Construction Co., city, for improving 3d st., Park ave., Temple ct., Elkhart ave. and Cassopolis st.

**Indianapolis, Ind.**—By Board of Public Works, for paving with bituminous concrete portion of East New York st., to Union Asphalt Construction Co., at \$2.20 per lin. ft., or about \$24,000.

**Clarinda, Ia.**—By city, for grading, paving and curbing Washington, 18th, State and other streets, to Concrete Construction Co., Cedar Rapids, at \$1.09 sq. yd. for paving, and curb 27 cts. per sq. ft.

**Davenport, Ia.**—By City Council, for paving 10th, 12th and Iowa sts., to Independent Construction Co. and Sturdevant, Claussen, Oak 5th and Pine sts., to McCarthy Improvement Co., of Davenport.

**Iowa City, Ia.**—Wm. Horrabin has been awarded contract for 50,000 sq. yds. concrete paving.

**Hiawatha, Kan.**—By City Council, to Chaffin Paving Co., for paving with brick 17 blocks, at \$1.22 per sq. yd.

**Leavenworth, Kans.**—To McGuire & Stanton, for paving Kickapoo st., at \$9,252.

**Ft. Leavenworth, Kans.**—To Thos. F. Jones, at \$5,774, for constructing macadam roads, sidewalks, curbs and gutters.

**Jackson Barracks, La.**—To the General Contract Co., New Orleans, at \$1,330.90, for constructing gutters and walks at Jackson Barracks.

**Ft. Andrews, Mass.**—To Thos. Whalen & Co., at \$4,900, for constructing roads, walks and drains.

**Baltimore, Md.**—Paving Commission has recommended that Contracts 20, 24 and 25, opened some time ago, be awarded respectively, to Filbert Paving & Construction Co., P. F. Reddington and John F. Quinn.

**North Adams, Mass.**—By H. E. Blake, Commissioner Public Works, for 9,600 sq. yds. brick and about 1,800 sq. yds. concrete paving, to Field, Barker & Underwood, Arcade Bldg., Philadelphia, Pa., for \$31,525.

**North Adams, Mass.**—By Commissioner Public Works, for 9,600 sq. yds. brick and about 1,800 sq. yds. concrete paving, to Field, Barker & Underwood, Arcade Bldg., Philadelphia, Pa., for \$31,525.

**Westfield, Mass.**—For about 7,000 sq. yds. of pavement, to Bernie, Adams & Ruxton Construction Co., of Springfield, Mass.

**Catonsville, Md.**—To Eden Construction Co., for combination concrete sidewalks, curbs and gutters in Eden terrace, Catonsville, for about \$15,000.

**Bay City, Mich.**—By City Council, for following paving contracts: Sherman st. and Woodside ave., from First to Johnson, granitoid concrete pavement, Rudolph S. Blome Co., \$13,068.50; street railway right of way on Sherman and Woodside, from First to Johnson, granitoid concrete pavement, Rudolph S. Blome Co., \$4,343.80; Adams st., from Third to Second and 125 ft. east on Second st., granitoid concrete pavement, Rudolph S. Blome Co., \$3,348.62; Third st., from Johnson to Farragut, granitoid concrete pavement, Rudolph S. Blome Co., \$6,762.88; Sherman st., from McKinley to Center, mineral rubber pavement, Carpenter & Anderson, \$5,463.50; Water st., from Lafayette ave. to 28th st., mineral rubber pavement, Carpenter & Anderson, \$8,368.40; Adams st., from Seventh to McKinley, mineral rubber pavement, \$2,229.60.

**Grand Haven, Mich.**—To H. Vanderveen, Grand Rapids, Mich., and Wierenga & Ruiters, Grand Haven, for paving various streets.

**Grand Rapids, Mich.**—By city, for Chestnut st. improvement, to Kloote & Venderveer, at \$11,159.94.

**Webish, Minn.**—To A. P. Reer and Theodore Ledding, for building a town road.

**St. Louis, Mo.**—By Board of Public Improvements for following street and sidewalk improvements and reconstructions: Street Improvements and Reconstruction—Asphalt: To Murray Construction Co., 23d, from Washington to O'Fallon, \$24,935.27; 13th, from Biddle to O'Fallon, \$530.44; Osceola, between Broadway and Virginia, \$22,463.16; Utah, between Michigan and Louisiana, \$8,858.28; North Market, between Goodfellow and Hamilton,

\$8,851.85. Brick—Kimberly, between Greer and Ashland, to Bambrick Bros. Construction Co., \$2,092.62. Sidewalk Improvement—Boyle, between Clayton and Laclede, to John B. Turner, \$656.80; Dalton, between Arsenal and Columbia, to N. B. Watters, \$561; south side of Reber pl., between January and Dalton, to Hinchman-Renton Construction Co., \$171.60; Reber pl., between Old Manchester rd. and January, to John B. Turner, \$359; Daggett, between King's Highway and Cooper, to John B. Turner, \$178.90; Michigan, between Miami and Cherokee, to Hinchman-Renton Construction Co., \$218.63; Minnesota, between Miami and Cherokee, to Hinchman-Renton Construction Co., \$122.40; Neosho, between Virginia and Grand, to Hinchman-Renton Construction Co., \$487.25; Wells, between Clara and Goodfellow, to Frank A. Stiers, \$728.30; McCaffery pl., between Cora and Marcus, to Frank A. Stiers, \$378.90; east side of Skinner rd., between St. Louis, Kansas City and Colorado Railway Co.'s right of way and Berlin, to John B. Turner, \$66.90; Columbia, between Macklind and January, running south of Columbia, to N. B. Watters, \$196.55; Columbia, between Sulphur and 152 feet west of Clifton ave., running south of Columbia, to John B. Turner, \$176.55; north side of Juniata, between Morgan Ford rd. and Alfred, to John B. Turner, \$143; North Market, between Glasgow and Garrison, to John B. Turner, \$862.40; Maple, between Hodiadmont and Western city limits, to Frank A. Stiers, \$451.40; east side of Oregon, between Gasconade and Osage, to Hinchman-Renton Construction Co., \$365.70; Bates, between Broadway and Virginia, running north of Bates, to Hinchman-Renton Construction Co., \$174; Bates, between Virginia, running north of Bates and Alabama, running north of Bates sts., to Hinchman-Renton Construction Co., \$174; Clay, between Kosuth and Carter, to Frank A. Stiers, \$144.25; Iowa, between Winnebago and Miami, to Hinchman-Renton Construction Co., \$46.50; Parnell, between Warren and Herbert, to John B. Turner, \$694.20; Potomac, between California and Louisiana, to Hinchman-Renton Construction Co., \$1,003.88; Vermont, between Robert and Blow, to Hinchman-Renton Construction Co., \$81.20; north side of Manchester, between Prather and McCausland, to John B. Turner, \$225.80; Virginia, between Meramac and Gasconade, to Hinchman-Renton Construction Co., \$639.28.

**Missoula, Mont.**—By City Engineer, for work in two paving districts, aggregating about 22,000 sq. yds. pavement, as follows: Gerald ave., to Strange-Maguire Paving Co., of Salt Lake City, Utah, with office in Missoula, for 2-in. bitulithic on 4-in. concrete base, for \$43,091, and for Cedar st., to Nash & Nottingham, of Missoula, for concrete block, for \$26,470.

**Ft. Crook, Neb.**—To Anderson-Friedman Construction Co., for constructing certain roads and walks.

**Hastings, Neb.**—Contract for Burlington ave. has been awarded to Midwest Engineering Co., Omaha, at \$2.04 per sq. yd.

**Atlantic City, N. J.**—By City Council, to Standard Bitulithic Co., city, for paving St. James pl., from Baltic to Pacific ave.

**Atlantic City, N. J.**—To Standard Bitulithic Co., to pave St. James pl. with asphalt, for \$9,197. Bids were received on wood block, lowest being \$14,573, and for bitulithic, lowest bid, that of Standard Bitulithic Co., being \$9,197. Street Committee selected asphalt as being cheaper than wood block.

**Elizabeth, N. J.**—By City Council, to James J. Potter, Elizabeth, at \$12,276, for construction of brick pavement on Atlantic ave. William H. Luster is City Engineer.

**Long Branch, N. J.**—By City, for re-graveling of Liberty st., to Walter Butcher, at \$4,700.

**Albany, N. Y.**—By Board of Contract and supply, for street improvements: Morris st., from Delaware ave. to Knox st., T. Henry Dumary, city, \$15,867.30; Grant ave., from Central ave. to 3d st., John M. Holler, city, \$10,925; West st., from Robin st. to Lake ave., John M. Holler, city, \$9,219.

**Auburn N. Y.**—By Common Council, for paving as follows: Lincoln st., to Tum-puskil & Stents, of Binghamton, \$10,287; Green st. and Five Points, to Fine & Willey, for \$8,007 and \$4,765, respectively.

**Herkimer, N. Y.**—By Board Trustees, for paving Albany st., to Warren Bros. Co., at \$15,027.

**Rochester, N. Y.**—By Board of Contract and Supply, to H. N. Cowles, for paving with brick, Bernhard st., \$8,577, and Costar st., \$11,790.

**Cincinnati, O.**—By Park Commissioners, for 45,000 cu. yds. excavation for road between Gilbert and Rockdale aves., to Scott & Walker, 45 Blymyer Bldg., at 28½ cts. per cu. yd.

**Ottawa, O.**—For constructing A. W. Dangler rd. to Ritz & Creager, for \$7,172.

**Pultney, O.**—By Town Commissioners, to Pickett & Schaugeldt, for construction of a brick roadway, a distance of 1.43 miles.

**Maumee, O.**—By Village Council, for grading, draining, paving and otherwise improving streets: Wayne st., to Maple & Mullen, Lima, O.; Dudley st., to J. D. Raymer, Toledo, O.

**Steubenville, O.**—By Board of Public Service, for paving Wellesley and Madison aves., to H. M. Bates; Washington st. and Wilken st., to J. O. Bates.

**St. Clair, O.**—By town, for one mile brick paving 10 ft. wide, to Wright & Morris. P. R. Walker, County Clerk.

**Upper Sandusky, O.**—By County Commissioners, to Dishar Bros., city, at \$11,994.75, for grading and paving with a water-bound macadam section 1 of the Uncapher rd. in Marselles Township.

**Upper Sandusky, O.**—By Council, to Geo. B. Herring & Son, Mansfield, O., for 10,934 sq. yds. of paving.

**Silverton, Ore.**—By City Council, to Clarke, Henry & Co., for laying about 31,000 yds. asphaltic concrete on macadam base, \$63,454.

**Barnesboro, Pa.**—To Peter Manchuso, for 21 cement crossings.

**Erie, Pa.**—For paving north line of 24th st., to Contractors McCormick & Son, their price being \$1.48 a yd. for Class B asphalt and \$1.60 for brick. Doyle bid was \$1.55 on asphalt and \$1.75 on brick. Mayers bid was \$1.60 asphalt and \$1.66 for brick.

**Greensburg, Pa.**—To J. M. Hutchinson, of Altoona, for rebuilding old pike, between Ligonier and Greensburg.

**McKeesport, Pa.**—For laying creosoted wood block floor and carbolineum sidewalk on bridge across Youghiogheny at Suterville, to Farris Bridge Co.

**New Castle, Pa.**—By Trustees of Common, at New Castle, to Amble-Davis Co., to lay town's first improved paving on Delaware st., between Second and Third, at cost of \$3,500.

**Philadelphia, Pa.**—By Bureau of Highways, for repairing and patching asphalt streets not occupied by passenger railway tracks, (a) foundation not renewed per sq. yd., (b) foundation renewed per sq. yd.: Barber Asphalt Paving Co., Land Title Bldg., Philadelphia, (a) \$1.14, (b) \$1.54; Eastern Paving Co., Paxter Bldg., Philadelphia, (a) \$1.03, (b) \$1.58; Union Paving Co., 112 N. Broad st., Philadelphia, (a) 87 cts., (b) \$1.57.

**Nashville, Tenn.**—By Board of Public Works, for building of sidewalks on Olympic, Vernon, Alloway sts. and 17th ave. south, to Mimms-Sneed Co.

**Palestine, Tex.**—By County Commissioners, for constructing 20 miles of sand clay road, to Larkland & Carroll, of Palestine, for about \$40,000.

**Salt Lake City, Utah.**—G. A. Heman, St. Louis, is reported to have been the lowest bidder for five large paving extensions.

**Richmond, Va.**—To I. J. Smith & Co., of Richmond, at \$2.54, for paving Broad st. with asphalt. Pavement will be laid on 6-in. concrete base.

**Blaine, Wash.**—For paving with asphalt Martin st. to Atlas Construction Co., for \$19,277.

**Bremerton, Wash.**—By Council, to John Gabler, Seattle, Wash., for concrete sidewalks, etc., along Burwell ave. at Bremerton.

**Chehalis, Wash.**—By County Commissioners, to B. S. Davis, of Tacoma, for construction of 1½ miles of hard surface roadway, at \$27,345.

**Reardon, Wash.**—For 3½ miles of State highway out from Reardon, to John P. Costello & Co., Spokane, at \$16,500.

**Seattle, Wash.**—By Commissioners of King County, to H. A. Jordan, at \$36,203, for construction of Warrenite pavement on Rd. No. 1A.

**Tacoma, Wash.**—For paving Local Improvement District 483 with asphalt, to Keasel Construction Co., at following bid: Excavation, per cu. yd., 50 cts.; 5-in. concrete base, 61 cts.; 2-in. wearing surface, 80 cts.; 4-in. concrete walk, 10 cts., and plain concrete curb, 20 cts.; total for asphalt, \$71,343. Other bidders: (a) asphalt, (b) bituminous concrete: A. H. Robinson, (a) \$80,000, (b) \$80,000; Washington Paving Co., (a) \$76,147, (b) \$76,147; Joe Warlin, (a) \$79,990.



## SEWERAGE

**Pasadena, Cal.**—City Council has adopted resolution providing for construction of Sierra Bonita storm water conduit.

**Hartford, Conn.**—City will construct Public sewer in Prospect st.

**Evansville, Ind.**—Council has determined to improve Wallace st. by constructing sanitary sewer.

**Indianapolis, Ind.**—Experimental sewerage disposal plant, costing \$10,000, will be built.

**Senatobia, Miss.**—There is a movement on foot here for a sewer system.

**Jefferson City, Mo.**—Special committee has reported unfavorably on proposition for sewer and drainage system.

**Buffalo, N. Y.**—Council has ordered construction of 12-in. tile sewer in Hubbell ave.

**New Hartford, N. Y.**—Bids are asked, July 11, for \$44,000 sewer bonds.

**Syracuse, N. Y.**—Lowest bids received on sewer work are as follows: Eight-in. pipe sewer in Amy st. from a point 85 ft. from Seymour st. to Seymour st., and in Seymour st. from Amy st. to south Geddes st., Philip Thomas, \$412.45; 12-in. pipe sewer in Summer ave. from Euclid ave. to Clarendon st., Alexander Barr, \$912; 12-in. pipe sewer in Beverly rd. from the end of the street to Crossett st., Charles Bonn, \$346.80; 12-in. sewer in South Beech st. from Madison st. to Cherry st., Alexander Barr, \$983.75; 12-in. pipe sewer in North Crouse ave. from Burnett ave. to West Shore R.R. tracks, David Murphy, \$301.

**Cleveland, O.**—Plans have been completed by Engineer Pratt for new sewerage disposal plant in Upper Cuyahoga Valley.

**Granville, O.**—Plans are being prepared by the W. J. Sherman Co., Toledo, O., for sewers and a sewage purification plant.

**New London, O.**—W. J. Sherman Co., Toledo, O., is preparing plans for sewers and sewage purification plant.

**Bend, Ore.**—City Council has accepted plans for a sewer system to cost about \$292,614.

**Portland, Ore.**—Plans for construction of the Canyon rd. sewer to drain 423 acres of land have been prepared by City Engineer; estimated cost of conduit, \$60,000.

**Carbondale, Pa.**—City Clerk has been instructed to invite proposals for service of an engineer to draw plans for a sewerage disposal plant.

**Chester, Pa.**—Council has passed bills providing for construction of several sewers.

**Erie, Pa.**—Ordinance has been passed for constructing sanitary sewer in Wallace, 23d and 24th sts.

**Erie, Pa.**—Ordinance has been passed providing for 9-in. sanitary sewers in Hess ave., Ninth to Elliott sts.; in Ninth st., Hess ave. west, 290 ft.; in Eighth st., Hess ave. west, 290 ft.; Seventh st., Hess ave., 290 ft. west; Elliott st., Hess ave., 290 ft. west.

**Erie, Pa.**—Ordinance for issue of bonds has been amended to read \$40,000 for sewers and \$15,000 for electric conduits.

**Sharon, Pa.**—Engineer Nicholls is drawing plans for extensive storm water sewer, for Newcastle st.

**York, Pa.**—Ordinances providing for construction of storm water sewers on Newton al., from Water st. to Northern Central Ry., and on West College ave., from Oak lane to railroad, have been finally passed by Common Council.

**Paris, Tex.**—Vote on issuance of bonds for \$140,000 for sanitary sewers, street paving and fire department was more than 6 to 1 in favor of proposition.

**Sweetwater, Tex.**—By vote of 131 for and 51 against citizenship of Sweetwater voted to issue sewer bonds to amount of \$35,000.

## CONTRACTS AWARDED

**Van Buren, Ark.**—By Board of Commissioners, for constructing sanitary sewer system, about 24,895 ft. of 6- to 12-in. vitrified pipe, 300 ft. 8-in. cast iron pipe, manholes, flush tanks, lampholes, etc., from plans of W. B. Bell, Engineer, Box 354 Van Buren, to Oklahoma Construction Co., of Oklahoma City, Okla., at following bid: 8- to 12-in. sewer, 24 cts. to 75 cts. per ft.; 6 x 6 to 6 x 12-in. Ys, 35 cts. to \$1.25 each; 16 lampholes, each, \$3; 50 6-in. manholes, each, \$18; 55 additional feet of manhole, \$3; 9 flush tanks, each, \$50; rock excavation, \$3 per cu. yd.; 22,000 lbs. cast iron, 2½ cts.; concrete, \$10 per cu. yd.; total, \$10,590. Totals of other bids:

Tonkawa Construction Co., Tonkawa, Okla., \$12,641; Pouncey Paving & Construction Co., Memphis, Tenn., \$13,255; Chas. Derr, Oklahoma City, Okla., \$13,019; F. S. Smedley, Muskogee, Okla., \$13,922; Will F. Plummer Co., Springfield, Mo., \$14,100; Hamilton & Co., Ft. Smith, \$14,633; Williams, Hays & Payne, Ft. Smith, \$18,385.

**Oakland, Cal.**—By City, for 8-in. sewers in various streets, to C. W. Cross, at following: For furnishing and laying 8-in. pipe, at 60 cts. per lin. ft.; furnishing and laying 8-in. "Y" branches, at 45 cts. each extra; constructing brick manholes, with covers, complete, \$40 each; lampholes, \$10 each. Frank R. Thompson, City Clerk.

**Oakland, Cal.**—By City, for construction of 8-in. sewers in various streets, to Ransome-Crummey, at following prices: Furnishing and laying 24-in. pipe, at \$2.33 per lin. ft.; furnishing and laying 12-in. pipe, at \$1.07 per lin. ft.; furnishing and laying 10-in. pipe, at 97 cts. per lin. ft.; furnishing and laying 8-in. pipe, at 81c. per lin. ft.; furnishing and laying 24-in. pipe, Y branches, at \$2.50 each extra; furnishing and laying 12-in. Y branches, at \$1 each extra; furnishing and laying 10-in. Y branches, at 75 cts. each extra; furnishing 8-in. Y branches, at 60 cts. each extra; constructing brick manholes, with covers, complete, \$55 each extra; furnishing and laying 8-in. Y branches, at 60 cts. each extra; constructing brick manholes, with covers, complete, \$55 each; constructing lampholes, with covers, complete, \$12.50 each; constructing drop connections, \$5 each. Frank R. Thompson, City Clerk.

**Oakland, Cal.**—By city, for construction of sewers in various streets, to F. Rolandi, at following prices: Furnishing and laying 16-inch pipe, at \$1.75 per lin. ft.; furnishing and laying 14-in. pipe, at \$1.50 per lin. ft.; furnishing and laying 12-in. pipe, at \$1.25 per lin. ft.; furnishing and laying 10-in. pipe, \$1 per lin. ft.; furnishing and laying 8-in. pipe, \$1 per lin. ft.; furnishing and laying 16-in. Y branches, \$2.50 each extra; furnishing and laying 14-in. Y branches, \$2 each extra; furnishing and laying 12-in. Y branches, \$1.50 each extra; furnishing and laying 10-in. Y branches, \$1 each extra; furnishing and laying 8-in. Y branches, 75 cts. each, extra; constructing brick manholes, with covers, complete, \$30 each; constructing lampholes, with covers, complete, \$10 each; constructing drop connections, \$5 each. Frank R. Thompson, City Clerk.

**Rockford, Ill.**—To construct two sewers in southeast section of city, to Henry Nelch & Sons, at 68 cts. per ft. for 18-in. and 67 cts. for 15-in.

**Crawfordsville, Ind.**—By City Council, to D. Stout, at \$5,893.74, for construction of 3,332 lin. ft. of 24-in. vitrified pipe sewer in W. Main st.

**Goshen, Ind.**—To construct sewer system in West Goshen, to Charles Kutz, Goshen, at \$6,450.

**Michigan City, Ind.**—By Board of Public Works, to August Schneider, for the construction of a local sewer in 8th st. and Grant ave.

**Vincennes, Ind.**—By County Commissioners, for concrete sewer, to Chas. M. Gilmore, for \$1,168.

**Burlington, Ia.**—To construct 15-in. vitrified pipe sewers in various streets, to Fred W. Guenther, Burlington, at \$1.38 per lin. ft. for sewer complete, and \$1.85 per cu. yd. for rock excavation.

**Iola, Kan.**—By Council, to Concrete Construction Co., city, at \$336.17, for construction of a sewer in District No. 14.

**Opelousa, La.**—By city, to Southern Asphalt & Construction Co., of Birmingham, Ala., for construction of sewerage system for district, at about \$53,000.

**Croswell, Mich.**—By city, for constructing sewers, to Emanuel L. Schneider, of Ann Arbor, Mich.

**Croswell, Mich.**—To Emanuel L. Schneider, Ann Arbor, Mich., for construction of a sewer in main sewer district No. 1 at Croswell.

**Grand Rapids, Mich.**—By city, for construction of Breen's court sewer, to John Meyers, at \$658.74, and for sewer on Ann st., to J. J. Rens, at \$1,332.23.

**Albert Lea, Minn.**—Bids opened July 3 for constructing sewers awarded to Illstrup & Olsen, Wyse, Minn., at \$20,715.75. Other bids were: A. L. Jones, Sioux Falls, S. Dak., \$24,300; Green Bros., Albert Lea, \$23,532; Thill-Manny-Whalen Co., La Crosse, Wis., \$24,983.

**Doniphan, Mo.**—To Bell & Hudson, of Doniphan, for constructing sanitary sew-

ers, for \$8,971. Frank L. Wilcox is Engineer, Chemical Bldg., St. Louis.

**Kansas City, Mo.**—By Board of Public Works, for construction of joint district sewer from Swope Parkway and 50th st. to 49th st. and Kenwood ave., to Parker-Washington Co., for \$45,047, to be concrete throughout, portion of it being of reinforced concrete pipe and rest of reinforced monolithic construction.

**Bloomfield, N. J.**—By County Board of Freeholders at Newark, for sewer in Watchung ave., Bloomfield, to Jac. T. Boylan, of Belleville, for \$6,687.

**Westfield, N. J.**—By town, for constructing section of North Main sewer and laterals in said town, to Louis Jacques, Elizabeth, for \$14,266.

**Havelock, Neb.**—By Council, to J. W. Hamilton, city, for the construction of a sanitary sewer lateral in sewer district No. 4.

**Omaha, Neb.**—By Council, to Donahue & Peterson, for constructing a sewer in 30th st. and O'Brien's Addition.

**Ft. Omaha, Neb.**—To Katz Construction Co., 350 Brandeis Theater Bldg., Omaha, at \$5,000, for addition to sewer system at Ft. Omaha.

**Albany, N. Y.**—By Board of Contract and Supply, to John Doyle, city, at \$695, for constructing a sewer in Daniel st.

**Buffalo, N. Y.**—By Common Council, for 24, 20, 18, 15, 12 and 10-in. tile sewers in Rounds and Adeptus aves., to Wm. C. Culleton, for \$8,288.

**Frankfort, N. Y.**—By Board of Sewer Commissioners, for sewage disposal plant from plans of Vrooman & Perry, of Canajoharie, to Aetna Engineering & Construction Co., Herkimer.

**Rochester, N. Y.**—By Board of Contract and Supply, to Ripton & Murphy, at \$57,695, for sewer leading to disposal works.

**Schenectady, N. Y.**—Board of Contract has awarded contract for construction of Second Ward sewer system to Frank George and A. J. Shaw, Batavia, N. Y., for \$44,341. Other bidders were: Chas. Ippolito, Orange, N. J., \$44,919; Union Paving Co., \$48,438; D. E. Nallo & Klingsberg, Schenectady, \$53,410; John Allen, \$53,511; Henry Spinach Contracting Co., Waterbury, Conn., \$60,912.

**Newburg, O.**—By Board of Control, for constructing sewers, as follows: Four sewers, J. Winterbotham; one sewer, Thomas Egan; one sewer, John Gallagher; six sewers, W. McDowell.

**Steubenville, O.**—By Board of Public Service, to F. H. Patterson, for constructing a sewer in Alley C.

**Erie, Pa.**—For 30-in. storm water sewer in West 29th and other streets, to Contractor F. J. Eichenlaub, on his bid of \$1.98 for main pipe, \$1.19 for 24-in. pipe, \$1 for 20-in. pipe, bringing his contract to \$12,395.02. McCormick's total bid was \$12,732.35. J. & M. Doyle bid \$2.10 a ft., and Edward Driscoll \$2.60 a ft. on main sewer.

**Erie, Pa.**—For construction of 9-in. sewer in 24th st., from Parade st., to Joseph McCormick & Bro.

**Erie, Pa.**—For two sewer contracts, to Joseph McCormick & Bro. Largest is 9-in. sewer in 22d st., Wallace and 23d sts., at 80 cts. ft. for 9-in. pipe and laying, 40 cts. for 6-in. pipe, 80 cts. for Y and T branches and \$40 for manholes. Edward Driscoll asked 85 cts.; C. Wolfrau, \$1.08, and F. G. Diefendorf \$1.12 for the job. On Lynch resolution for 9-in. sewer in Laurel st., from 29th st. south 840 ft., McCormick's bid was 90 cts. for 9-in., 45 cts. for 6-in. pipe, \$1.15 for branches, and \$40 for manholes. Other bids were Edward Driscoll, 90 cts. for 9-in. and 50 cts. for 6-in. pipe; Clements Wolfram, 89 cts. for 9-in. and 59 cts. for 6-in. pipe, and F. G. Diefendorf, 95 cts. for 9-in. pipe.

**Reading, Pa.**—Board of Public Works has awarded several contracts to J. A. Martin and J. E. Widner for storm sewers.

**Nashville, Tenn.**—By Board of Public Works, for building sewer in alley 438, between 16th ave. and Villa pl., to Barnsfield, Patton & Fisher, at \$1,376.

**Ft. Bliss, Tex.**—To Jennings & Wood, at \$11,900, for a sewer pipe line.

**Fort Bliss, Tex.**—To construct sewer pipe line to connect outfall sewer at Fort Bliss with sewer system at El Paso, to Jennings & Wood, at \$11,900.

**Ft. Worth, Tex.**—Commissioners have awarded contract to F. A. Johnson for sewer on Jarvis st., at \$5,168.75; Dazevalle st. to B. F. & C. M. Davis, at \$6,580.70, and Lipscomb st. to same, at \$3,084.25.

**Fort Bliss, Tex.**—To Jennings & Wood, for sewer pipe line, for \$11,900.

## WATER SUPPLY

**Haleyville, Ala.**—Bond in sum of \$15,000 have been issued for new water works.

**Fruitvale, Cal.**—Extension of water pipes across upper Fruitvale is being discussed.

**Pasadena, Cal.**—Electors of Pasadena will vote on question of incurring bonded indebtedness of \$1,250,000 for purpose of acquiring and constructing water works system to supply city. City has offered to purchase properties of three big companies here, at following prices: For Lake Vineyard Co.'s property, \$621,622.31. For Pasadena Land & Water Co., \$335,312.75. For North Pasadena Co.'s property, \$194,217.83.

**Rio Vista, Cal.**—Contract is about to be let for water-storage tanks and sewer system from plans of E. N. Eager, of Fairfield; probable cost \$20,000.

**Blackshear, Ga.**—Citizens on June 25 voted to issue \$23,000 bonds for water works. B. D. Brantley, of Blackshear, is Engineer.

**Halley, Idaho**—Question of constructing water works is reported under consideration.

**Fairfield, Ill.**—City Council has passed an ordinance providing for water works, to cost \$25,000.

**Freeport, Ill.**—City Council has voted new franchise to the Freeport Water Co., which provides for the expenditure of \$182,000 for improvements before July 1, 1914.

**Moline, Ill.**—Election will be held July 23 for voting on \$164,000 bond issue for water works extension.

**Fortville, Ind.**—Citizens are reported to have voted to install water works system and light plant.

**Burlington, Ia.**—Plans are being prepared by Engineer Dabney H. Maury for enlarging reservoir, to cost \$13,500, and for erecting water tower to cost \$13,000.

**Madisonville, Ky.**—City desires estimates for boring one or more wells, sufficient for water supply for 5,000 people.

**Haverhill, Mass.**—Water Commissioners have approved estimates for following improvements to water works: Stand-pipe, 20 in. diam. by 40-in. height, 94,000 gal. capacity, \$2,800; foundation, \$500; total, \$3,300; pumping station, \$1,500; pumping machinery (1,200 gal. pump and motor complete), \$3,000; intake into pond, \$500; piping system: 3,000 ft. 8-in. pipe, at 85 cts., \$2,550; 10,000 ft. 6-in. pipe, at 65 cts., \$6,500; gate and fittings, \$200; 10 hydrants, at \$40, \$400; rock excavation, \$400; total, \$10,050; grand total, \$18,350.

**Taunton, Mass.**—For extension of water mains to Winthrop st. from present terminus near slaughter house to bridge, and on other side of river to Dighton line, appropriation of \$8,000 will be recommended.

**Highland Park, Mich.**—Bids for purchase of \$49,500 bonds, to be used for extending water system, will be received July 11. Construction work will be done by the city of Detroit.

**Saline, Mich.**—The W. J. Sherman Co., Toledo, O., is preparing plans for water works and sewerage.

**Jefferson City, Mo.**—Jefferson City Water Works Co. has been sold by Hugo Monnig, its chief owner, to J. N. Chester, Pittsburgh, and others, for about \$150,000.

**Omaha, Neb.**—The water works of the Omaha Water Co. were formally transferred to the city July 6.

**Beach Haven, N. J.**—Bids will be received by W. Mercer Baird, Mayor of Beach Haven, until noon, July 15, 1912, for the purchase of the whole or any part of \$70,000 water, gas and improvement bonds.

**Newton, N. J.**—Water Commission has sold \$25,000 of water bonds. Proceeds will be used to purchase Morris Lake, source of water supply of town.

**Ballston, Spa, N. Y.**—Saratoga County Board of Supervisors have decided upon adequate system of fire protection for Saratoga County Almshouse here. It will consist of storage reservoir, pumps and electric generators, and stand pipes will be installed in building for the purpose.

**Deposit, N. Y.**—S. M. Baird, of Binghamton, has recommended the construction of water works at Deposit.

**Rochester, N. Y.**—Secretary Frank X. Pifer has been directed to advertise for bids for supply water to Department of Public Works for territory now served by mains of Rochester & Lake Ontario Water Co.

**Schenectady, N. Y.**—Bureau of Water has under contemplation construction of

third large water main through city, and Fred W. Bentley will shortly have plans made of proposed route which main is to take.

**Walden, N. Y.**—At special village election proposition to extend village water system from Hill st. through East ave. to Boulevard, thence through Elm st. to Grant st., has been carried. Water pipes have already been ordered and bids will be advertised for and the work commenced inside of a month.

**Fargo, N. Dak.**—Superintendent of Water Works has recommended extension of 6-in. main in a number of streets.

**Cleveland, O.**—Work on construction of 20,000-gal. reservoir is about to be started by Water Works Department on city farm at Warrensville. New reservoir will be one-quarter size of Fairmount reservoir and will be part of new southeasterly extension of Cleveland's water works system.

**Dayton, O.**—Bonds in sum of \$120,000 have been issued for extension of water works.

**Hood River, Ore.**—Citizens have voted to issue \$90,000 bonds for constructing municipal water system.

**Milwaukee, Ore.**—Citizens will vote on \$40,000 bond issue for purchase of present water works or construction of new system.

**Philadelphia, Pa.**—Bill has been passed for installation of water meters.

**West Reading, Pa.**—Borough Solicitor W. A. Whitman, Jr., has suggested that Borough build a municipal water works.

**Barnwell, S. C.**—Edward Hawes, Jr., of Orangeburg, has been selected engineer to design and construct water works system and electric light plant for Commissioner of Public Works, J. M. Easterling, Chairman.

**Knoxville, Tenn.**—Water mains will be extended along Melrose ave.

**Dallas, Tex.**—Printed plans and specifications with ample drawings of Dallas water works filtration plant have been received from special expert engineer J. H. Fuentes at New York. Plans are detailed and intended to furnish every needed information to bidders for construction of plant. Bonds are to be sold to amount of \$400,000, of which it is expected that one-half will suffice for construction of plant and its full equipment.

**El Paso, Tex.**—El Paso County has been granted permission by County Commissioners to vote on \$71,000 bond issue for irrigation.

**Fort Worth, Tex.**—City will lay 12-in. main, to cost about \$8,000.

**Portsmouth, Va.**—Finance Committee of Council has decided to recommend sale of \$600,000 worth of water bonds for purpose of providing funds for erection of municipal water plant.

**Leavenworth, Wash.**—City Engineer has been instructed by City Council to prepare plans for water works, to include a pumping plant and a stand pipe.

## CONTRACTS AWARDED

**Ft. Huachuca, Ariz.**—To Griffith & Pachon Co., Tucson, Ariz., for approximately 9 miles of water supply pipe line.

**Burley, Idaho**—To James Kennedy, Salt Lake City, for constructing water works and sewage, at \$42,960 and \$21,781, respectively.

**Cresco, Ia.**—By Council, to Decorah Cement Sidewalk Co., Decorah, Ia., at \$3,250, for the construction of a water supply reservoir for Cresco.

**Columbus, Ind.**—By City, for filtration and water purification plant, to Roberts Filter Mfg. Co., of Darby, Pa., at \$59,844. E. A. Cobb, City Clerk.

**Holyoke, Mass.**—By Water Board, for pipe to be used in Smiths Ferry extension, to U. S. Cast Iron & Foundry Co., for \$22.60 per ton, or about \$15,000, and the Chapman Valve Co., of Indian Orchard, for valves, at total of \$532.

**Holyoke, Mass.**—By Water Board, for pipe to be used in the Smiths Ferry extension, to U. S. Cast Iron & Foundry Co., for \$22.60 per ton, or about \$15,000, and the Chapman Valve Co., of Indian Orchard, for valves, at a total of \$532.

**Perth Amboy, N. J.**—To George Pfeiffer, Camden, for drilling 10 wells.

**Havelock, Nebr.**—J. W. Hamilton, city, for one block cast iron water main extension and 100 ft. cast iron pipe for tunnel work.

**Ft. Mott, N. J.**—To John Swescott, Salem, N. J., at \$779, for waterproofing concrete reservoir at Ft. Mott.

**East Williston, N. Y.**—To lay 12,225 ft. of 4 to 8-in. pipe and set 27 hydrants, to W. E. Sexton, at \$10,079. Other bids

were: A. G. Milligan, \$10,508; Edward V. Titus, \$10,577; Ralph F. Kelly, \$10,122; Partridge & Burke, \$10,325; Cloyd Davis, \$10,370; Gifford Construction Co., \$10,392.

**Ft. H. G. Wright, N. Y.**—To Harry McNally, 5 E. 42d st., New York City, for constructing 34 reinforced concrete cisterns at Ft. H. G. Wright, for \$33,000.

**Ft. Terry, N. Y.**—For improvements to water supply system at Ft. Terry, as follows: August Benveniste, New London, Conn., items 1 and 2, \$5,447; Whitall Electric Co., Westerly, R. I., for pumps and electrical apparatus, \$2,880.

**Geneseo, N. Y.**—By Water Commission, for building distributing reservoir and laying cast iron water pipe, to Halloran Bros., of Elmira.

**Granville, N. Y.**—By Board of Village Trustees, for constructing reinforced concrete reservoir, 100 ft. diameter and 22 ft. deep, requiring approximately 550 cu. yds. of concrete and 50 tons of reinforcing steel bars, from plans of Chas. E. Collins, Drexel Bldg., Philadelphia, Pa., to W. L. Town, of Poughkeepsie, N. Y., for \$8,444.

**New York, N. Y.**—For installing electric equipment in addition to and alterations in School 20, Borough of Bronx, to Anderson-Martin Electric Co., 1 Madison ave., for \$7,741.

**Newburg, O.**—By Board of Control, to Wilhelm Smith and John Gallagher, for constructing water mains in Kinsman rd.

**Toledo, O.**—To furnish and erect vertical pumping engine of 32,000,000 gal. capacity, in high service pumping station, to Allis-Chalmers Co., Milwaukee, Wis., at \$82,000.

**Ft. Sill, Okla.**—To H. W. Johns-Manville Co., at \$1,182.50, for waterproofing the reservoir at Ft. Sill.

**Erie, Pa.**—By Water Commissioners, for battery of four boilers of 300 horsepower each to be used in new water works pumping station, to Hernal Safety Boiler Co., of Phoenixville, Pa., at \$23,967. Other bids as follows: E. Keller Co., Williamsport, \$24,715.35; Union Iron Works, Erie, \$28,100; Babcock & Wilcox Co., Cleveland, \$28,161; Erie City Iron Works, Erie, \$28,900.

**Hooversville, Pa.**—To Suppes & Jones, of Johnstown, for building reservoir of Hooversville Water Co.

**McKeesport, Pa.**—By Water Commissioners, to James Carderill, for water mains on 13th ave., at his bid of 35 cts. for 4-in. pipe, 40 cts. for 6-in., 45 cts. for 8-in. and 60 cts. for 14-in. pipe, being the lowest received. There were two other bidders, Hengstler & White and the D. B. Hough Co.

**Belton, S. C.**—To Edward Hawes, Jr., of Orangeburg, for construction of two miles of water mains.

**Cleburne, Tex.**—To N. S. Sherman, of Oklahoma City, Okla., for laying water mains, for \$5,277, and for brick pumping station, to J. A. Thomas, for \$7,777, and to Faucett & Hall, for sinking deep well, at \$4.75 per ft.

**Terrell, Tex.**—To construct water system here, to Lane Bowler Co., Houston, Tex., at approximately \$25,000.

**Ft. Worden, Wash.**—To W. B. Mullin Co., at \$2,354, for installing a 4-in. cast iron water main in rear of the main battery.

**Appleton, Wis.**—By Council, in connection with improvements to water works, as follows: Valves and hydrants, to Ludlow Valve Co.; pipe, to U. S. Cast Iron Pipe & Foundry Co.; cast iron fittings, jute and lead, to J. B. Clow & Sons, and for labor, to the J. H. Green & Sons Co., of Aurora, at 41 cts. per lin. ft.

**Guantanamo, Cuba.**—By the Bureau of Yards and Docks, Navy Department, for furnishing a 25,000-gal. quadruple-effect sea water distilling plant, to the Pure Water Apparatus Co., Abbott Bldg., Philadelphia, Pa., at \$16,800.

## LIGHTING AND POWER

**Berkeley, Cal.**—A report will be presented to Council this month urging issue of \$42,000 bonds for an electric light plant. J. Wilson, Mayor.

**Marysville, Cal.**—Arrangements are being made by the Oro Electric Light & Power Co. to supply electricity here. New distributing system will be installed.

**Tulare, Cal.**—Tulare County Power Co. has applied to State Railroad Commission for permission to raise funds to develop and distribute electricity in the western part of Tulare County.

**Chicago, Ill.**—Streets in north side will be equipped with electrical arc and Tungsten lights in 25th and 26th Wards; estimated cost, \$214,500.



**Columbus Junction, Ia.**—Proposed electric light plant will cost about \$30,000, but work will be done by force account.

**Shell Rock, Ia.**—An electric light franchise has been granted to Uri and Wm. Richards.

**Woodland, Ia.**—Boone Electric Co., of Boone, has secured franchise to install and operate an electric system here.

**Twin Falls, Idaho.**—Plans are being considered for the installation of a cluster lamp street lighting system in the business district.

**Sheridan, Ind.**—The City Council is reported to be planning to install an electric distributing system. A transmission line will be erected from Noblesville, a distance of 11 miles, where electricity will be secured to operate the system.

**Louisville, Ky.**—Louisville Lighting Co. is contemplating extending its transmission lines into Middletown, Anchorage and Jeffersontown to supply electricity; cost of extension, \$25,000 to \$30,000.

**Excelsior Springs, Mo.**—Henry I. Lea, Consulting Gas Engineer, Chicago, Ill., has been retained in connection with the reconstruction of the gas plant and distribution system at Excelsior Springs, and he is now preparing plans and specifications, and will soon ask for bids.

**Beach Haven, N. J.**—Bids will be received by W. Mercer Baird, Mayor, until noon, July 15, for purchase of whole or any part of \$70,000 gas, water and improvement bonds.

**Cleveland, O.**—Establishment of \$1,000,000 municipal heating plant is being considered.

**Middleport, O.**—An election will probably soon be held to vote on issuing \$80,000 bonds for an electric light plant and water works.

**Bend, Ore.**—Bend Water, Light & Power Co. has decided to erect an electric power plant to cost about \$40,000.

**Marshfield, Ore.**—M. J. Anderson, Grants Pass, and others are promoting water power project to Coos County, which will involve an expenditure of about \$1,000,000.

**Butler, Pa.**—Edward H. Wise, of Johnstown, has applied to Council for a franchise to erect transmission lines in Butler.

**Lehighton, Pa.**—Lehighton Council has finally passed ordinance giving Parryville Gas Co. franchise throughout town.

**Meyersdale, Pa.**—The report submitted by Sidney B. Martin, Pittsburgh, Consulting Engineer, to Borough Council regarding municipal light plant estimates cost at about \$7,735.

**Morristown, Pa.**—Council has approved the recommendation of Finance Committee to purchase the Wyoming Mills property, on the river front, from the estate of John T. Dyer, for \$50,000, and thus perpetuate its water power rights for the operation of the municipal electric light plant.

**Barrow, S. C.**—Edward Hawes, Jr., of Orangeburg, has been selected engineer to design and construct electric light plant and water works system for Commissioner of Public Works. J. M. East-erling, Chairman.

**Spartanburg, S. C.**—City Council has granted P. J. Wood, of Augusta, Ga., a 50-year franchise to supply electricity for lamps and motors.

**Amarillo, Tex.**—City Light & Water Co., of Dover, Del., has been granted permit to do business in Texas. Headquarters this city.

**Palestine, Tex.**—Young Men's Business League is advocating installation of decorative system of street illumination. City Commissioners are said to favor it.

#### CONTRACTS AWARDED

**Boulder, Col.**—For construction of municipal electric lighting plant, to O'Brian Construction Co., Boulder.

**Ft. Oglethorpe, Ga.**—To the W. M. Perry Electric Co., Brooklyn, N. Y., at \$32,487, for work in connection with the electric light system at Ft. Oglethorpe.

**Ft. Hancock, N. J.**—To W. M. Sheehan & Co., 114 Liberty st., New York City, and L. B. Jacobs, Newark, Del., for installing electric lighting system and apparatus in power plant at Ft. Hancock.

**Ft. Mott, N. J.**—To F. E. Newberry Electric Co., St. Louis, Mo., at \$14,861.75, for installing an electric light system at Ft. Mott.

**Rochester, N. Y.**—For lighting city for period of five years, to Rochester Railway & Light Co., by Board of Contract and Supply, for \$350,941.95 a year. Board also awarded contract for lighting East ave., where magnetic lights have been installed, to Rochester Railway & Light Co., at 25 cts. a night per light.

**Philadelphia, Pa.**—To the Westinghouse Electric & Mfg. Co., at \$14,625, for remodeling electric light and power plant at the depot quartermaster's depot.

**Sharon, Pa.**—Bid of Sidney B. Martin, Pittsburgh, electrical engineer, for making plans and supervising work of municipal lighting plant for 3 per cent. of cost, estimated to be \$85,000, has been accepted.

**Ft. Columbia, Wash.**—For work in connection with the electric light system, to Macham & Babcock, and to William E. Chase Engineering Co., at \$2,852 and \$4,351, respectively.

#### FIRE EQUIPMENT

**Hartford, Conn.**—Purchase of auto for Chief is being discussed.

**Athens, Ga.**—New fire headquarters will be erected.

**New Albany, Ind.**—Fire station will be equipped with combination wagon.

**Boston, Mass.**—Boston Chamber of Commerce has approved plans of Louis K. Rourke, Commissioner of Public Works, for location of proposed pumping station for high pressure fire service under Charles st., between Boston Common and Public Garden. Installation of system of high pressure fire service is to cost about \$1,000,000.

**Portland, Me.**—Installation of a compressed air fire alarm whistle is under consideration. City Electrician Lowell has obtained figures from Western Electric Co. for a suitable system at \$2,500.

**Taunton, Mass.**—Sum of \$10,000 will be expended on new fire station.

**Muskegon, Mich.**—City is considering purchase of auto truck.

**Saginaw, Mich.**—City is considering purchase of motor fire engine.

**Austin, Minn.**—City Council will erect reinforced concrete fire station, to cost \$12,000.

**Hackensack, N. J.**—New auto will probably be purchased for fire chief.

**Millville, N. J.**—Millville firemen have discovered that their recently purchased hose is fast rotting, and they are urging Council, to erect at once a new tower in which hose may be dried.

**Trenton, N. J.**—Ordinance has been passed to authorize issuance of bonds for purpose of purchasing one steam fire engine, two hose and chemical motor wagons, one motor extension truck, repairing Truck No. 2, and for reconstructing and repairing buildings known as Truch Company No. 3 and Engine Company No. 3. Also ordinance to authorize issuance of bonds for purchase of lands, erection of fire engine house thereon, and equipping same. Harry B. Salter, City Clerk.

**Syracuse, N. Y.**—New hose house for Tanner Hose Co., to cost \$5,000, has been authorized.

**Union, Ore.**—Additional apparatus will probably be purchased.

**Chester, Pa.**—Chief of Fire Department L. E. Slater has recommended that outlet on fire plugs be raised 20 inches above pavement.

**Dallas, Tex.**—Harry A. Overbeck has been employed to make plans and specifications for new fire house.

**Tacoma, Wash.**—New fire headquarters will be erected.

**Wellsburg, W. Va.**—Purchase of 506 ft of fire hose has been authorized.

#### CONTRACT AWARDED

**Atlantic City, N. J.**—For fire house, to Wilbert Beaumont, 12 S. Tennessee ave.

**Millville, N. J.**—Contract for hose tower has been awarded to Henry Hoffman for \$2,465.

**Depew, N. Y.**—For fire hall, to Meyer & Meyer, Lancaster, N. Y., at \$5,000.

**Oil City, Pa.**—For building of hose house, to H. C. Mundt, at \$3,881.

#### BRIDGES

**Oakland, Cal.**—County Supervisors have adopted plans for concrete bridge in Niles Canyon prepared by County Surveyor P. A. Haviland. Bridge consists of five spans, total length 512 ft. Cost, \$65,000.

**San Francisco, Cal.**—Harbor Board has awarded San Francisco Bridge Co. contract for constructing Pier 28, costing \$358,400. Pier will be of concrete cylinder construction, 800 ft. long and 150 ft. wide.

**Denver, Col.**—Engineer Fellows will prepare plans and estimates for viaduct 5,600 ft. long on West Colfax ave. Cost may be about \$750,000.

**Rochester, N. Y.**—Construction of bridge across Genesee River, connecting Summerville and Ontario Beach, is being planned.

**Dayton, O.**—Plans are being considered for Keowee st. bridge across Mad River.

**Amity, Pa.**—Citizens have petitioned for new bridge over Leaf's Creek.

**Bethlehem, Pa.**—Citizens are urging County Commissioners to build modern bridge between Bethlehem and South Bethlehem. Bridge will be largest in this section of the State.

**Pittsburgh, Pa.**—Department of Public Works has decided to construct a 30-in. main n Second ave., from Ross st. to 10th st. bridge, to cost about \$8,500.

**York, Pa.**—Councilmen have adopted resolution requesting York County Commissioners to erect new bridge of modern design over Codorus Creek at West Market st.

**Chattanooga, Tenn.**—Agreement between city and railroads regarding McCallie ave. viaduct has been reached and work will proceed. Robert Hooke is City Engineer.

#### CONTRACTS AWARDED

**Frankfort, Ind.**—By Board of Clinton County Commissioners, to Frankfort Construction Co., Frankfort, at \$3,485, for building Armstrong bridge. C. F. Cromwell is Clinton County Auditor.

**Jeffersonville, Ind.**—To Attica Bridge Co., Attica, at \$1,098 and \$1,462, for two bridges, one at Robinson's Ford and other at Bowes's Ford.

**Newville, Ind.**—To construct bridge here, to George Jaap, Fort Wayne, Ind., at \$21,889.

**Davenport, Ia.**—To Clinton Bridge Co., for repairing bridge, at \$1,850.

**Sioux City, Ia.**—To Lewis & Leeder, for constructing concrete bridge over Floyd River at 11 st., for \$5,000.

**Leavenworth, Kan.**—For bridges costing \$945, \$134 and \$790, to John Pierce, of Tonganoxie; others costing \$884 and \$590, to Goldberg & Son; one costing \$627, to Missouri Valley Bridge & Iron Works; repairing bridge, \$285, to Little Stranger Bridge Co.; \$347, \$118 and \$193, to J. F. Moltin.

**Morris, Minn.**—To Security Bridge Co., Minneapolis, at \$2,840, for construction of bridge spanning State road over Pommede Terre.

**Red Wing, Minn.**—By Goodhue County Commissioners, for bridge construction, as follows: Iblings Bridge Co., Minneapolis, two structures over Hay's Creek, at \$959 and \$835; one in Featherstone, at \$1,222, and one in Florence, at \$3,920; W. L. Bowen, Lake City, for bridge in Central Point, to cost \$1,350; W. L. Bassett & Co., for bridge in Stanton, at \$2,275.

**McGraw, Neb.**—To construct McGraw State aid bridge, to John L. Mullen, Lincoln, Neb., at \$21,653.

**Rochester, N. Y.**—By County Superintendent of Highways, Rochester, to Oswego Bridge Co., Oswego, at \$23,944, for construction of Rush-Wheatland bridge over Genesee River. Other bids received were as follows: Barraly & Ingersoll, \$25,000; Seneca Engineering Co., \$28,163; Lane Bridge Co., \$29,695; Massillon Bridge & Structural Co., \$26,400.

**Salamanca, N. Y.**—To construct bridge at Third st., by State Highway Commission, to Owego Bridge Co., Owego, N. Y., at \$67,972.

**Toledo, O.**—By Board of Control, Toledo, to C. H. Fath, 516 Electric Bldg., Cleveland, for construction of piers for the Ash-Consaul st. bridge, at bid of \$119,234. Other bids received for work were: Great Lakes Towing Co., \$146,946; Rabbit & Sons, \$134,911.

**Allentown, Pa.**—For constructing reinforced concrete viaduct to connect 12th Ward with main part of city, to McArthur Bros., 11 Pine st., New York, \$306,000. Other bids as follows: W. P. Carmichael, St. Louis, Mo., \$306,200; George H. Hardner, Allentown, \$310,400; McNichol Construction Co., Philadelphia, Pa., \$339,070; Eyre-Shoemaker Co., Philadelphia, Pa., \$344,000; Cramp & Co., Philadelphia, Pa., \$360,500; Dunn & McCarthy, Chicago, Ill., \$617,965.

#### MISCELLANEOUS

**Birmingham, Ala.**—By unanimous vote members of Board of Revenue of Jefferson County recently adopted resolution calling for special election to determine whether bonds to amount of \$1,100,000 shall be issued for erection of new county courthouse, new county jail, new courthouse at Bessemer and new wing to Hillman Hospital, election to be held August 12.

**Long Beach, Cal.**—Realty Board has pledged itself to voting of bond issue by adopting resolution asking City Council to submit to people at early date question of voting bonds to extent of \$100,000 for additional dockage and freight-handling facilities.

**Oakland, Cal.**—Budget filed by acting Chief of Police W. J. Petersen recommends construction of three new station. Estimate includes patron wagons, \$2,125; autos, \$2,150.

**Sacramento, Cal.**—Board of City Trustees has passed ordinance calling for bond election on July 24 for \$194,000 for new city jail and Hall of Justice.

**Washington, D. C.**—A concession has been granted to a business man for the construction and operation of a public slaughterhouse in a Latin-American city. The construction of this plant will call for iron framework for the building and roofing material; the walls doubtless will consist of masonry; and the power of the plant as at present planned will be a gas producer, manufacturing the gas from charcoal. Moreover, a small dynamo, a small refrigerator plant and an ice machine will be needed. Bureau of Manufactures, No. 9738.

**Taylorville, Ill.**—City will hold election 000 for purchasing 55 acres land for park. August 3 to decide on bond issue of \$30,-

**Indianapolis, Ind.**—Board of Works routine, resolutions confirmed—Euclid ave., from Michigan to second alley north of Michigan, curbing; 30th st., from Broadway to College, sidewalks; Garfield drive, from Shelby to New st., sidewalks; first alley west of Central, from 24th to 26th, improvements; Ohmer ave., from University to Downey, sidewalk; Dearborn, from Washington to New York, sidewalk; Audubon rd., from Lowell to Michigan, sidewalk; first alley west of Congress, from Barnes to Elmira, roadway; Dearborn st., from Washington to New York, roadway; College ave., from 40th to 42d, sidewalk; Brightwood ave., from Massachusetts to 28th, sidewalk; Pine st., from St. Clair to Davidson, sidewalk. Resolutions Adopted—Yandes st., from 24d to 23d sts., sidewalk; first alley east of Park ave., from 21st. to 23d, improvements.

**Muncie, Ind.**—In obedience to requests of State and various local boards of charities condemning Delaware County Infirmary as unsanitary, county is preparing to reconstruct infirmary building at cost of between \$50,000 and \$100,000.

**Tipton, Ind.**—County Council has made appropriation of \$2,000, which will be used for repairs and improvements at county infirmary.

**New Orleans, La.**—City Engineer has estimated cost of constructing bridge over New Basin Canal at Magnolia st., at \$25,-000.

**Portland, Me.**—Bids will be soon received on constructing new police station.

**New Bedford, Mass.**—Finance Committee has awarded bonds in sum of \$471,028.77 to R. L. Day & Co., and Estabrook & Co., of Boston.

**St. Louis, Mo.**—Supply Commissioner Joseph B. Thomas has sent to Controller B. J. Taussig for his approval bid of Ford Automobile Co. offering to sell city 15 runabouts at \$623 each. Taussig said he would wait to receive bids for several touring cars and trucks before acting on Ford bids.

**Irvington, N. J.**—Playground Commission will ask for bids for \$32,500 bonds for purchasing land and equipping playground.

**Brooklyn, N. Y.**—Official approval has been given by Board of Estimate to plans for comprehensive improvement of waterfront in and around Rockaways, in Borough of Queens.

**Lockport, N. Y.**—Building Committee of Board of Supervisors are considering plans for construction of new poorhouse.

**Syracuse, N. Y.**—County Highway Department has put in application for automobile at meeting of Board of Supervisors.

**Winston, N. C.**—Election will be held July 23 for bond issues as follows: For improvement of streets and sidewalks, \$100,000; for sewerage, \$85,000; for water works system, \$50,000; for public school

buildings, \$60,000; for hospital, \$90,000; for public park, \$15,000.

**Cincinnati, O.**—Voters of city are to be asked to authorize bond issue of \$1,250,000, for acquisition of property and construction of municipal exhibition hall.

**Cleveland, O.**—All bids on contract for refrigerator plant to be installed in West Side market have been rejected, and advertisements calling for new bids July 15 will be inserted.

**Cleveland, O.**—Preparations are being made for installation of a municipal heating plant at Fairmount pumping station.

**Dayton, O.**—Architect Louis Lott has completed plans for McKinley Park for the equipment of which City Council recently appropriated \$9,000, and it is expected that the plans that have been outlined will be executed and the park completed within next 90 days.

**Philadelphia, Pa.**—Lowest bid received for removal of garbage was that of American Product Co., at \$229,300.

**Seattle, Wash.**—Council by ordinance has appropriated sum of \$500,000 from municipal light extension fund, which authorizes Board of Public Works to carry on work of construction of masonry dam at Cedar River at Thomson site at Camp No. 2.

#### CONTRACTS AWARDED

**San Francisco, Cal.**—By Harbor Board, to San Francisco Bridge Co., for construction of pier 28, foot of Brannan st., for \$358,400.

**Atlanta, Ga.**—To Destructor Co., of New York, for erection of \$376,000 crematory and power plant.

**Ft. Leavenworth, Kan.**—To the Dixon Engineering & Construction Co., at \$8,600, for constructing garbage crematory.

**Kyle, Tex.**—For erection of city hall, to Millhall Bros., at \$4,700.

**Suffolk, Va.**—Council has awarded contract to A. Stallings for remodeling municipal building at \$1,420.

### TOO LATE FOR CLASSIFICATION

#### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Pennsylvania.	Philadelphia.....	July 12, noon.....	Resurfacing asphalt streets and country roads.....	Dir. Pub. Works.
Texas.....	San Angelo.....	July 15.....	Constrn. 23,000 yds. creosoted blocks.....	City Sec.
Texas.....	Centerville.....	July 16, noon.....	Constrn. roads in Marquez district.....	W. D. Lacey, Co. Judge.
New York.....	Buffalo.....	July 16, 11 a.m.....	Macadamizing and paving number streets.....	F. G. Ward, Comr.
New York.....	St. George, Rich'd.....	July 16, noon.....	Constrn. about 40,000 yds. wood block.....	Geo. Cromwell, Boro. Pres.
New Jersey.....	Cranford.....	July 17, 8 p.m.....	Constrn. brick or other pavement, 1,100 yds.....	Edw. Mosher, Township Eng.
Florida.....	S. Jacksonville.....	July 18, 7 p.m.....	Constrn. brick, concrete or other pavement.....	D. D. Williams, City Clk.
Florida.....	Jacksonville.....	July 19, 10 a.m.....	Clearing and grading Duval road.....	G. L. Barnard, Co. Engr.
New York.....	Rochester.....	July 23, noon.....	Imp. East Side boulevard.....	J. Y. McClintock, Supt. Highways.
Florida.....	Fort Myers.....	Aug. 1, noon.....	Constrn. 10 miles macadam, including drainage, etc.....	H. E. Heitman.
<b>SEWERAGE</b>				
Michigan.....	Bay City.....	July 15, 9 a.m.....	Constrn. 12-in. tile sewer.....	R. O. Woodruff, Chrmn. B. P. W.
New Jersey.....	Trenton.....	July 17, 2.30 p.m.....	Constrn. drains in 2 streets.....	H. B. Salter, City Clk.
Pennsylvania.....	Haddon.....	July 23, 8 p.m.....	Constrn. 18,000 ft 6-in., 8,700 ft 8-in. and other tile sewers.....	A. M. Matthews, Chrmn. Comm.
New Jersey.....	Westfield.....	July 29, 8 p.m.....	Constrn. 2 concrete sedimentation tanks, 2 filters, etc.....	Chas. Clark, Town Clk.
<b>WATER SUPPLY</b>				
North Carolina.....	Carthage.....	July 16, 2 p.m.....	Constrn. water works and sewage system.....	W. G. Jennings, Sec. Commissioners.
Texas.....	Dallas.....	July 24.....	Constrn. filtration plant.....	
<b>FIRE EQUIPMENT</b>				
Michigan.....	Mt. Clemens.....	Aug. 5.....	Furn. 500 ft. fire hose.....	A. A. DeVanderer.

## Water Works for Small Cities and Towns

Describing the methods of construction of the various portions of a water-works plant  
By JOHN GOODELL. 281 pages, 53 illustrations. Price, \$2.00 net.

CHAPTER I—Surface Water. II—Earth Dams. III—Minor Details of Reservoirs. IV—Timber Dams. V—Masonry Dams. VI—Special Features of River and Pond Supplies. VII—Ground-Water Supplies. VIII—The Utilization of Springs. IX—Open Wells. X—Driven Wells. XI—Deep and Artesian Wells. XII—Pumps. XIII—The Air Lift. XIV—Pumping Stations. XV—Intakes and Intake Pipes. XVI—Clarification and Purification of Water. XVII—The Pipe System. XVIII—Service Reservoirs and Stand Pipes. XIX—The Quantity of Water to be Provided. XX—The Water Works Department.

#### BOOK DEPARTMENT

MUNICIPAL JOURNAL AND ENGINEER, 50 Union Square, NEW YORK



# Tarvia

*Preserves Roads  
Prevents Dust~.*



Boulevard—East Side Mississippi River—Minneapolis, Minn., Road Treated with Tarvia A.

## Tarvia “makes good” in Minneapolis

**M**INNEAPOLIS has been using Tarvia since 1907—and is using it still. On November 24, 1911, Mr. Theodore Wirth, Superintendent of the Board of Park Commissioners, Minneapolis, wrote:

“The Tarvia applied on Minnehaha Avenue in October, 1907, gave very satisfactory results. The application was made under the most ideal conditions, the new roadbed being just right to receive the binder and the screenings used for covering being of excellent quality. The surface withstood the traffic well and although the treatment has not been repeated, the roadbed is still in fairly good condition.

“The 46th St. section of King’s Highway was similarly treated in September, 1908, but in place of using stone screenings for covering, we used a fine pea gravel, which gave a pleasing color and a still better wearing surface.

“The last piece of tarviating we did was on the new River Road, east from Franklin Avenue, south to the city limits, where we also used pea gravel for dressing over Tarvia coating, with the same excellent results.

“This road was finished in June, 1910, and has been in constant use ever since by an immense amount of automobile traffic. I hope to be able to treat this road again with Tarvia next Spring. I am well pleased with the results of Tarvia on our roads.”

There are three kinds of Tarvia—Tarvia X for road and pavement construction, Tarvia A for surface work and Tarvia B for dust suppression and road preservation.

*Booklet Describing These Treatments Free on Request.*

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## STREET IMPROVEMENTS

**Hollister, Cal.**—San Benito County Highway Commission is now ready to begin construction under the \$300,000 bond issue voted last fall.

**Effingham, Ill.**—Citizens of Douglas Township are stated to have voted to issue \$35,000 bonds for rock roads.

**Augusta, Me.**—Executive Council ordered the expenditure of \$14,600 from the automobile fund for improvements of roads in different parts of the State. Greenbush and Etna were apportioned \$3,000 each; Casco, Poland and Naples, on the Poland and Fryeburg trunk line, were given \$2,000 each, and a similar sum was apportioned to the city of Waterville. Town of Woodstock was given \$600 for the improvement of a piece of road in that town.

**Alma, Mich.**—The W. J. Sherman Co., Toledo, O., has been selected to prepare plans for street improvements.

**Grand Rapids, Mich.**—Kallispell, Mont., Chamber of Commerce is advocating an issue of State bonds for road building. Secretary P. N. Bernard suggests that \$10,000,000 be the amount.

**Belen, N. M.**—County Commissioners have approved the right of way in the Valencia road.

**Oregon City, Ore.**—Bonds to amount of \$50,000 are to be sold for construction of a water works.

**Barnesboro, Pa.**—Ordinance for paying Philadelphia ave. has been passed. J. L. Elder & Son are engineers; J. D. Rittel, Chairman Paving Committee.

**Hazleton, Pa.**—First st. will be graded and curbed.

**Scranton, Pa.**—Ordinance providing for opening Penn ave., from Ash to Phelps, has been passed.

**Beaumont, Tex.**—Petition is being circulated in county asking for election to vote on \$100,000 bond issue for roads.

**Fort Worth, Tex.**—Resolution has been passed ordering paving of Hemphill st.

**Marshall, Tex.**—Citizens have voted to issue \$28,000 bonds for road improvements.

**Waxahachie, Tex.**—Citizens have voted to issue \$25,000 bonds for paving.

**Spokane, Wash.**—Council has approved plans for paving Ash st., at a cost of \$56,662, and Jefferson st., at cost of \$8,500.

## CONTRACTS AWARDED

**Los Angeles, Cal.**—By Board of Public Works, for filling 20 blocks in Wilmington, at \$89,852.13.

**Los Angeles, Cal.**—Following improvement contracts have been awarded: Ave. 20, from Darwin ave. to Albion, to J. J. Papac, at 10 11-16 cts. a sq. ft. for sidewalk; aggregate, \$756.67. Broadway (Wilmington), from Seventh to Ninth, to W. E. Nichols, at 6.75 cts. a sq. ft. for grading; 38 cts. a lin. ft. for cement curb; 17.5 cts. a sq. ft. for cement gutter; 50 cts. a sq. ft. for granite block gutter; 13.5 cts. a sq. ft. for sidewalk; aggregate, \$6,621.84. Lorena st., from Brooklyn to First, to O. L. Stevens, at \$4 a lin. ft. for grading and graveling; 35 cts. a lin. ft. for cement curb; 16 cts. a sq. ft. for cement gutter; 11 cts. a sq. ft. for sidewalk; aggregate, \$8,118.56. Mohawk st., from Reservoir to Elsinore, to O. L. Stevens, at 11 1/2 cts. a sq. ft. for sidewalk; aggregate, \$188.93. Sixth st. (San Pedro), from Beacon to Palos Verdes, to W. N. Hendricks, at \$600 for sewer complete.

**Decatur, Ill.**—By Highway Commission, for concrete road, to the Driscoll-McCalman Co., of Decatur, for \$9,654.

**Clarinda, Ia.**—By City, for grading, paving and curbing Washington, 18th, State and other streets, to Concrete Construction Co., of Cedar Rapids, at \$1.09 per sq. yd. for paving, and curb 27 cts. per sq. ft.

**Catonsville, Mo.**—By City to Eden Construction Co., for combination concrete sidewalks, curbs and gutters in Eden Terrace, for about \$15,000.

**Missoula, Mont.**—By City, for work in two paving districts aggregating about 22,000 sq. yds. pavement, as follows: Gerald ave., to Strange-Maguire Paving Co., of Salt Lake City, Utah, with office in Missoula, for 2-in. bitulithic on 4-in. concrete base, for \$43,091.

**Auburn, N. Y.**—By Common Council, for paving, as follows: Lincoln st., to Tumpuski & Stents, of Binghamton, \$10,287; Green st. and Five Points, to Fine &

Willey, for \$8,007 and \$4,765, respectively.

**Lockport, N. Y.**—By City Council, for paving Washburn st., to H. P. Burgard Co. Other bidders: Barber Asphalt Co. and German Rock Asphalt & Cement Co.

**Rochester, N. Y.**—By Board of Awards, Stratford st. brick pavement, to H. W. Hagaman, at \$2,475. The Utah alley asphalt pavement contract was transferred from the Rochester Vulcanite Paving Co. to Whitmore, Rauber & Vicinus. Because of delay on the contract for sidewalk work in Avondale Park by the contractor, M. J. Brinn, the Commissioner of Public Works was directed to do the work and there was the same procedure on contract for Blossom rd. sidewalk grading, contract being awarded to A. J. Margrander.

**McKeesport, Pa.**—By Council, to Daniel Stratton, for repaving Fawcett st. Other bidders: Bowman Bros. Co., P. F. Rhodes & Son and Hengstler & White.

**Pittsburgh, Pa.**—By City, for repaving sidewalks and roadway on Wilmot st. bridge, to Pittsburgh Sanitary Flooring Co.

**Ducktown, Tenn.**—By County Commissioners, for grading and macadamizing seven miles of road, to Russel, Denton & McClary Bros., of Benton, and W. T. Center, of Cooper Hill.

**Palestine, Tex.**—By County Commissioners, for constructing 20 miles of sand clay road, to Larkland & Carroll, of Palestine, for about \$40,000.

**Ogden, Utah.**—By City, to P. J. Moran Co., for paving portion of Gran ave. and intersections of Washington, 23d, 24th, 25th sts., for about \$25,000.

## SEWERAGE

**Erie, Pa.**—Ordinance has been passed providing for \$10,000 bond issue for sewage disposal plant for experimental purposes, to be built at mouth of Maiden Creek.

## CONTRACTS AWARDED

**Billings, Mont.**—By City, to Corn & Wilcox, for 670 ft. sewer, at \$1.20 per ft.

**Newark, N. J.**—By Passaic Valley Sewerage Commission, to Donlon & Co., of Brooklyn, for construction of 15th section of proposed trunk sewer in Acquackanonk Township. Firm's bid of \$278,170 was low. This was the second time that the Donlon company was awarded contract. The first time it made a mistake in figuring and submitted an estimate so low that it had to withdraw the bid and forfeit \$3,000.

**Rochester, N. Y.**—By Board of Awards, to Jacob Allmeroth, for part of division 6 sewage disposal system, at \$123,900. Other bidders: Whitmore, Rauber & Vicinus, \$137,777. For sewers: Jay st. sewer, M. Franciosa & Bros. Co., \$12,748; surface sewer in Hubbel Park, Passero & Petrossi, \$157,50; Joslyn pl. brick pavement, \$5,161.00; Grape st. brick pavement, Aikenhead, Bailey & Donaldson, \$1,299.50.

**Rochester, N. Y.**—Illinois Surety Co., Chicago, Ill., will complete Contract 6, sewage disposal system.

## WATER SUPPLY

**Guton, Ark.**—Water works and sewerage systems will be installed.

**Tuckerman, Ark.**—City will construct a water works and electric light plant.

**Arden, Del.**—A water works system will be installed, wells driven, a pipe line laid, and two gasoline pumping engines provided.

**Blackshear, Ga.**—City has voted \$60,000 for electric and water works plants.

**Columbus, Ga.**—City will vote on bond issue of \$500,000 for construction of municipal water works.

**Clarks Fork, Idaho.**—Citizens have voted to issue bonds for construction of a water works system.

**Georgetown, Ill.**—Citizens will vote on bond issue of \$12,000 for new water works system.

**Cromwell, Ind.**—Citizens have voted to construct water works system.

**Port Wayne, Ind.**—Water mains will be extended to Oak Knoll, distance of one-half mile.

**Kalamazoo, Mich.**—Election will be held July 29 to vote on bond issue of \$40,000 for installing of five miles of water mains.

**Royal Oak, Mich.**—Citizens have voted

to bond city in \$38,000 for construction of water works system.

**Madison, Minn.**—Citizens will vote on bond issue of \$50,000 for water works system and improvements on electric light plant.

**Kansas City, Mo.**—Suburb of Rosedale will expend \$20,000 for water works extension.

**Jackson, Miss.**—Acting Mayor Scarcy is urging installation of filter plant.

**Burlington, N. J.**—Application has been made for extension of water main on Columbus rd.; cost, \$450.

**Albion, N. Y.**—Citizens have voted to issue \$130,000 bonds for municipal water works system.

**Steubenville, O.**—Plans are being prepared for installation of mechanical filtration plant.

**Cheyenne, Okla.**—Election will be held for issuing of \$60,000 bonds for water works system.

**Welch, Okla.**—Citizens have voted \$15,000 bonds for water works improvements and \$3,000 for well drilling.

**Hood River, Ore.**—Citizens will vote on issuing \$36,000 bonds for water works system.

**Sioux Falls, S. Dak.**—Commissioner Gates has been authorized to purchase mains for water works extension.

**Port Arthur, Tex.**—City will issue bonds for \$460,000 for construction of water works system.

**Sherman, Tex.**—Water Works and sewerage bonds to amount of \$40,000 have been sold.

**Richmond, Va.**—City Engineer Charles E. Bolling is preparing plans for laying of water mains across the James River; cost estimated at \$40,000.

## CONTRACTS AWARDED

**Los Angeles, Cal.**—Board of Public Utilities has ordered San Pedro Water Co. to install 3-in. pipe on Bayview ave.

**San Francisco, Cal.**—Contra Costa Construction Co. were low bidder for high-pressure mains, at \$159,063. Other bidder: State Construction Co., \$176,232.

**Pittsburgh, Pa.**—By City, to John F. Casey Co., for building reservoir on north side, at \$615,681. Other bidders were: James H. McQuade Co., \$586,920.50; M. O'Herron Co., \$620,928.75; Booth & Flinn, \$666,933; Duquesne Contracting Co., \$684,519; T. A. Gillespie Co., \$641,782; Samuel Gamble, \$621,851.35.

## LIGHTING AND POWER

**Laramie, Wyo.**—Co-operating Electric Co., De Soto, Mo., has offered to build new plant in Laramie and pay city 50 per cent. of net earnings.

## CONTRACTS AWARDED

**Topeka, Kan.**—By Commissioners, to E. L. Overton, for installing "White Way" on W. Ninth st., using Flour City Ornamental Iron Works poles, at \$960.

**Sherman, Tex.**—By City Council, to W. S. Russel, franchise to pipe natural gas to city.

## FIRE EQUIPMENT

**St. Petersburg, Fla.**—\$10,000 bonds have been issued for improving Fire Department.

**Atlanta, Ga.**—It is reported that an entirely new fire alarm system will be installed in this city.

**Council Bluffs, Ia.**—City Council is discussing proposition to issue bonds for the purchase of a motor truck and the erection of a fire station.

**Des Moines, Ia.**—Seventy-five thousand dollars is being raised for improving the Fire Department.

**Webster City, Ia.**—Committee has been inspecting fire apparatus in neighboring towns with view of purchasing new equipment for this city.

**Troy, N. Y.**—National Board of Fire Underwriters has recommended the installation of a modern semi-automatic fire alarm system with many additional boxes of the successive types installed in future.

**Cleveland, O.**—Public Safety Department is contemplating the equipping of the present horse-drawn apparatus with motor tractors.

**Youngstown, O.**—Seventy thousand dollars bonds have been sold for purchase of motor apparatus.



**Erie, Pa.**—Chief McMahon has been authorized to advertise for bids for 600 ft. chemical hose and 4,500 ft. 2½-in. fire hose.

**Hazleton, Pa.**—City will buy double set of swinging harness.

**Lemoynes, Pa.**—Plans are being prepared for erection of fire station here.

**Nanticoke, Pa.**—Council will buy supplies for the department's new chemical truck. Chief Boyer asks for additional hose and repairs to that already in service.

**Shiremantown, Pa.**—Fire company is raising funds for new hose and other apparatus.

**Galveston, Tex.**—City will secure temporary fire boat until a permanent boat is bought.

#### CONTRACTS AWARDED

**San Francisco, Cal.**—By Board of Works, to Wold & Kohn, for truck and engine house, at \$35,247.

**Lethbridge, Alta.**—Press reports state that contract has been awarded to the Webb Motor Fire Apparatus Mfg. Co., of St. Louis, Mo., for furnishing a combination pumping engine at a cost of \$7,500.

**Enola, Pa.**—To S. C. Worach, for erection of a fire station.

#### BRIDGES

**Spokane, Wash.**—Boone Ave. Improvement Club is urging construction of bridge, from West Boone ave. to Fort George Wright.

#### MISCELLANEOUS

**Rochester, N. Y.**—Water Works Department will purchase two auto trucks.

**Collingdale, Pa.**—Council has passed ordinance authorizing issue of \$40,000 bonds for streets and sewers.

**Fort Worth, Tex.**—City Commission has authorized election to vote on \$100,000 bond issue for hospital.

**Sherman, Tex.**—Election will be held July 25 for vote on issue of \$198,000 improvement bonds, as follows: \$10,000 for water works; \$100,000 for pavements; \$75,000 for school buildings; \$13,000 for fire equipment.

**Lewiston, Utah.**—Bonds amounting to \$47,000 are offered for sale July 23.

#### PROPOSALS

##### FIRE EQUIPMENT

##### NOTICE TO MANUFACTURERS

The Secretary of the Borough of Sharon, Pa., will receive proposals until 12 o'clock noon, Aug. 6, 1912, for the purchase of an automobile fire engine. Manufacturers will submit specifications.

OSCAR J. DENNY,

(26-1-2) Borough Secretary.

#### FOR SALE

Twenty horse-drawn street watering carts, mostly steel tanks, and all in good condition.

AMERICAN CAR SPRINKLER CO.  
Worcester, Mass.

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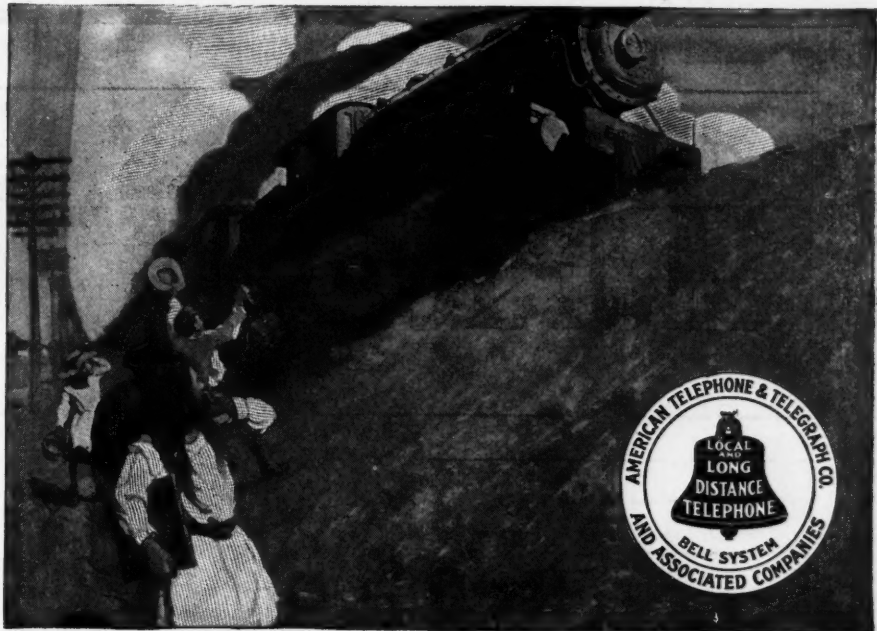
Wrought Pipe, second hand, all sizes, recut and rethreaded suitable for all classes of work. Prices quoted on application.

MARINE METAL & SUPPLY CO.  
167 South Street, New York City

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Gurley Transit (Level Bubble and Vertical Circle) .....	\$127.50
Eugene Dietzen Transit (Level Bubble) .....	145.00
Stackpole Transit (Level Bubble) .....	100.00
Keuffel & Esser 15" Wye Level .....	57.50
Eugene Dietzen 18" Wye Level .....	80.00
Stackpole 17" Wye Level .....	55.00

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## The Right of All the Way

Railroad service and telephone service have no common factors—they cannot be compared, but present some striking contrasts.

Each telephone message requires the right of all the way over which it is carried. A circuit composed of a pair of wires must be clear from end to end, for a single conversation.

A bird's eye view of any railroad track would show a procession of trains, one following the other, with intervals of safety between them.

The railroad carries passengers in train loads by wholesale, in a public conveyance, and the service given to each passenger is limited by the necessities of the others; while the telephone carries messages over wires devoted exclusively for the time being to the individual use of the subscriber or patron. Even a multi-millionaire could not afford the exclusive use of the railroad track between New York

and Chicago. But the telephone user has the whole track and the right of all the way, so long as he desires it.

It is an easy matter to transport 15,000 people over a single track between two points in twenty-four hours. To transport the voices of 15,000 people over a single two-wire circuit, allowing three minutes for each talk, would take more than thirty days.

The telephone system cannot put on more cars or run extra trains in order to carry more people. It must build more telephone tracks—string more wires.

The wonder of telephone development lies in the fact that the Bell System is so constructed and equipped that an exclusive right of all the way, between near-by or distant points, is economically used by over 24,000,000 people every day.

### AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

One Policy

One System

Universal Service

#### PROPOSALS

##### PAVING

Iola, Kan., July 3, 1912.

Sealed proposals will be received at this office until 5 o'clock P. M., of Monday, July 15, 1912, for the work of grading, curbing, guttering and paving portions of the following-named streets in the City of Iola, Kan., according to plans in the City Engineer's Office, East Jackson Ave., from the east line of Cottonwood St. to the east line of Second St.; and, Oak St., from the south line of Madison Ave. to the north line of Broadway St. The approximate quantities of work to be done are as follows:

Excavation .....	1,916.5 cu. yds.
Concrete curbing .....	4,648.5 lin. ft.
Concrete paving .....	5,475.6 sq. yds.

Instructions to bidders, together with specifications and forms for the contract and bonds, can be obtained upon application at the office of the City Engineer. The right is reserved to reject any or all bids.

T. F. ZIEGLER,  
City Clerk.  
VENE D. FRY,  
City Engineer.

#### STREET IMPROVEMENT

Bloomfield, Ia., June 25, 1912.

Paving 44,035 yds. pavement, Brick, Asphaltic, concrete or cement; 21,406 lin. ft. of curb, 3,915 cu. yds. grading, 200 ft. 12-in. storm sewer, 30 blocks of paving. Bids will be opened July 16, 8 p. m., 1912. For specifications and plans or information address

(1-2) A. B. WELCH, City Clerk.

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